MARINE REVIEW.

VOL. XVIII. CLEVELAND, O., SEPTEMBER 22, 1898. No. 11.

FOR OCEAN SERVICE.

A PROMINENT ATLANTIC COAST FIRM SEEKING TO BUY OR CHARTER A LARGE NUMBER OF LAKE STEAMERS AND BARGES.—TO TAKE THEM THROUGH THE CANALS.

Mr. Walter S. Besse, general manager of the Atlantic Transportation Co. of New York city, has visited several of the larger cities of the great lakes during the past few weeks in the interest of the furtherance of a scheme that may afford a partial solution of the problem of a surplus of tonnage on the great lakes, and at the same time provide a further period of usefulness for many of the smaller wooden vessels that have outlived their usefulness as a paying investment on fresh water.

The Atlantic Transportation Co. is engaged in towing coal from Newport News to Boston and New York, and intermediate points, and the object of the visit of the general manager to the lakes is to charter, if possible, from 15,000 to 20,000 tons of bottoms to be taken through the Canadian canals and utilized permanently in this coal trade on the coast. The availability of lake vessels for this service was impressed upon the company by its experience with the steamer J. J. Hill, built at Marine City, which the Atlantic company purchased after she was taken to the coast some time ago and which they now have in service.

Mr. Besse, according to the representations made to vessel owners with whom he has talked, prefers to secure, if possible, tow barges of from 1,200 to possibly 2,000 tons, although he might take also two or three steamers of about the same tonnage, if they be suitable for towing purposes, and if satisfactory terms can be made. He will also, it is said, purchase outright any vessels with which he is suited, although most of the propositions he has made contemplated the charter of vessels for from one to two years, with the privilege of purchase at any time during the period or at its expiration. Mr. Besse and J. C. Gilchrist, one of the Cleveland vessel owners with whom he has been carrying on negotiations for several boats, this week made a trip to the vicinity of the Welland canal and the St. Lawrence, with a view to investigating the matter of taking the boats through to the coast. If the vessels are chartered outright at lake ports, the Atlantic company will, of course, bear the total expense of taking them through the canals. The plan contemplates the permanent transference of the vessels to the coast, and if it is successful, there is a probability that by next season additional charters of lake vessels will be made by the Atlantic company and by other concerns in the coal business on the coast who will follow their example. There has been a disposition on the part of some of the lake vessel owners approached in the matter to hold out for outright sales of their craft, rather than to consent to any chartering arrangement, but there is no doubt that even should they maintain this stand Mr. Besse will obtain quite a number of vessels. He will also, while in the lake region, make arrangements for securing equipments of hoisting and conveying machinery and car dumpers, such as is used in the handling of coal at lake ports.

Since the above was written Messrs. Gilchrist and Besse have returned from their trip to the St. Lawrence, and it is announced that Mr. Gilchrist has made arrangements with the Atlantic Transportation Co. to take all ten of his wooden schooners on a three-year charter. It is understood that the Atlantic company will take, probably, twenty-five vessels in all. They are now negotiating with several parties for more vessels.

Steady Improvement in Lake Business.

If it were not for a falling off in the iron ore movement, the present season of navigation would close with freights decidedly profitable to lake vessel owners. Heavy shipments of ore in the early part of the season gave promise of a record exceeding 14,500,000 gross tons for the full year from the Lake Superior region, but this is now being materially cut down through the inability of the mining companies to produce the ore, largely on account of a scarcity of labor. In several instances ore that has been held in stock at some of the old range mines for three or four years has found a market. There has never been such a cleaning up of stock piles as has taken place this year, but on the other hand the failure of mining operations to come up to expectations has been a drawback to lake freights. One of the largest of the Cleveland mining and shipping concerns, unable to provide employment for an immense fleet of ships coming under its direction, on account of the curtailment in ore shipments, has been taking large quantities of Duluth grain. This has, of course, acted against higher grain freights. Still, the volume of business in all lines is so large that a moderate upward tendency prevails in the freight market, and iron ore rates are now up to 60 cents from the head of the lakes, 55 cents from Marquette and 50 cents from Escanaba, with Chicago paying 1⅜ cents on corn to Buffalo, and Duluth offering 2 cents on wheat to Buffalo for vessels to arrive. Indications are still in the direction of a steady moderate advance for the balance of the fall, notwithstanding the falling off in ore shipments.

The heavy losses sustained by the insurance companies on account of a large number of accidents all around the lakes within the past few days, are causing some anxiety among vessel men regarding hull insurance next year, especially on wooden vessels. It is predicted in some quarters that there will be no insurance for wooden vessels next year and that the rates on steel hulls will certainly be marked up. Principals of the few strong companies still in the lake business are undoubtedly very much dissatisfied. The questions of next year's business is still a long way off, however, and there is no telling what changes may take place after a balance on premiums and losses is drawn at the close of the present season and before new policies are sought in the spring.

Coal Cargo Record Broken.

All records for the transportation of coal cargoes on the great lakes were broken this week when the steamer Hendrick S. Holden, recently completed by the Globe Iron Works Co. for Capt. John Mitchell and others of Cleveland, on her initial trip took out of Buffalo for Duluth a cargo of 6,432 net tons of anthracite coal on a draught of 17 feet 8 inches forward and 17 feet 1 inch aft without fuel. The best previous record (soft coal) was that made by the schooner Polynesia, which some time ago carried from Cleveland to Duluth 5,654 net tons of bituminous coal on a draught of 16 feet. Coal cargoes, carried on up trips, are seldom if ever equal to the ore and grain cargoes carried down the lakes. Cargo records to date are as follows:

Iron ore—Schooner John A. Roebling, owned by the Bessemer Steamship Co. of Cleveland, 6,953 gross or 7,866 net tons. Duluth to Conneaut, draught of 17 feet 6 inches; schooner John Fritz, owned by Bessemer Steamship Co., Cleveland, 6,960 gross or 7,795 net tons. Duluth to Conneaut; steamer Superior City, owned by A. B. Wolvin of Duluth, 6,823 gross or 7,642 net tons, Escanaba to South Chicago.

Grain—Steamer Superior City, owned by A. B. Wolvin of Duluth, 266,550 bushels of corn, equal to 7,463 net tons, South Chicago to Owen Sound, draught of 18 feet 2 inches: steamer W. R. Linn, C. W. Elphicke and others, Chicago, 232,000 bushels of corn, equal to 6,496 net tons, South Chicago to Owen Sound; steel schooner Australia, James Corrigan of Cleveland, 210,539 bushels of wheat, equal to 6,316 net tons, Chicago to Buffalo; steamer Andrew Carnegie, Wilson Transit Co. of Cleveland, 332,100 bushels of oats, equal to 5,313 net tons, Manitowoc to Buffalo.

Coal—Steamer Hendrick S. Holden, Capt John Mitchell and others, Cleveland, 6,432 net tons of anthracite, Buffalo to Duluth on a draught of 17 feet 8 inches forward and 17 feet 1 inch aft; schooner Polynesia, James Corrigan of Cleveland, 5,694 net tons of bituminous, Cleveland to Duluth, 16 feet draught; steamer Carnegie, Wilson Transit Co. of Cleveland, 5,369 net tons of bituminous, Cleveland to Duluth.

Reorganization of Our Naval Fleet.

The navy department is busy with the work of reorganization necessary to bring the naval and auxiliary fleet down to a peace footing. The Atlantic fleet is to be disposed of first, and of the one hundred vessels lately under command of Admiral Sampson, only thirty-two will remain in commission. With the departure of the Oregon and Iowa for the Pacific the reduced fleet will consist of the battleships Indiana, Massachusetts and Texas; armored cruisers New York and Brooklyn; monitors Amphitrite, Puritan, Miantonomah and Terror; cruisers Cincinnati, Montgomery, Newark, San Francisco, Detroit, Marblehead, New Orleans and Mayflower; gunboats Bancroft, Marietta, Topeka, Castine, Nashville, Wilmington, Machias and Princeton; auxiliaries Fern, Wasp, Hist, Resolute, Potomac, Scorpion and Alverado. The auxiliary cruisers Yankee, Dixie, Prairie and Yosemite—formerly the Morgan liners—together with the marine transports Badger and Panther, are held in reserve at the League island navy yard. Among the vessels of the auxiliary fleet to be placed out of commission are the Siren, Stranger, Oneida, Tecumseh, Viking, Frolic, Apache, Sylvia, Gloucester, Vixen, Elfrida and Aileen. The receiving ships New Hampshire, St. Louis, Minnesota and Dale have been turned over to the states of New York, Pennsylvania, Massachusetts and Maryland, respectively, for the use of the naval militia organizations, and the receiving ship Portsmouth to the state of New Jersey for the same purpose. The monitor Amphitrite will have to be towed to this country from Mole St. Nicholas, Hayti, where she lies with her engines totally disabled.

Bright Prospects for the Maryland Steel Co.

Arrangements of the final details preparatory to the opening of the ship yard of the Maryland Steel Co. at Sparrow's Point, Md., are now being made. President F. W. Wood has practically completed the organization of a force of ship builders, in whom he has every confidence. Mr. Andrew G. Wilson will act as superintendent, his son, Rogers Wilson, as assistant superintendent, A. S. Cheesebrough as designer of vessels, and Andrew Baird as superintendent of the mold loft. All of these gentlemen until recently held similar positions with the Harlan & Hollingsworth Co. of Wilmington, Del. Mr. Robert Cochran, late with the Columbian Iron Works, Baltimore, will serve as foreman of construction, and Capt. Joseph Brown, who was formerly with the Maryland company, returns as superintendent of the ship carpentry department. Other departments will be under the supervision of men of equal skill and experience. The company is practically certain of securing contracts from the government for the construction of three or four torpedo boat destroyers, and indications point also to considerable commercial work, estimates having already been given to New York parties who contemplate building two merchant vessels.

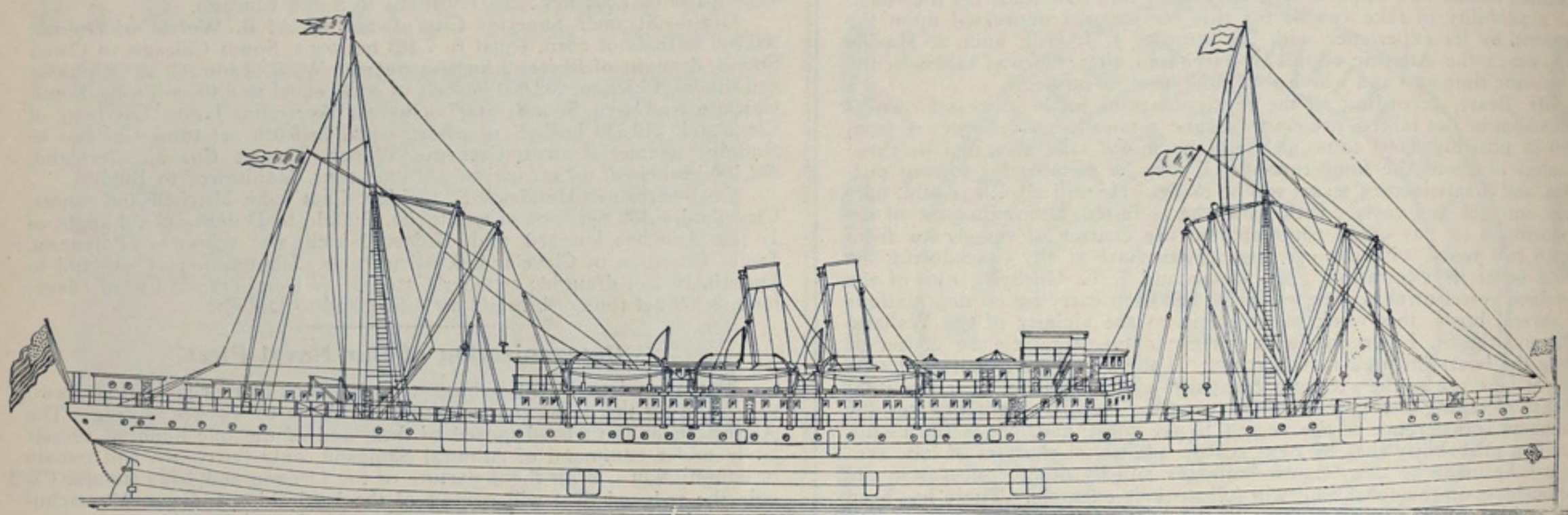
Mr. Francis T. Bowles, secretary of the Society of Naval Architects and Marine Engineers, announces that the society will hold its annual meeting in New York on Thursday and Friday, Nov. 10 and 11. The formal announcement of the meeting will be sent to members within a few days. This year's gathering promises to prove an exceptionally interesting one.

Commissioner of Navigation Chamberlain is receiving the thanks of vessel men for his action in issuing orders which have materially facilitated the process of retransferring to American registry American vessels which transferred their flag to the British on the outbreak of the war.

NEW WARD LINE STEAMERS.

TWO HANDSOME VESSELS NOW ON THE STOCKS AT THE WORKS OF THE WILLIAM CRAMP & SONS' SHIP & ENGINE BUILDING CO., PHILADELPHIA.

The Review presents herewith a plan of the fine new steamers building for the New York & Cuba Mail Steamship Co., popularly known as the Ward line, at the yard of the William Cramp & Sons Ship & Engine Building Co., Philadelphia. The vessels will be 360 feet in length on the water line, 50 feet beam moulded, 32 feet 2 inches depth, and will be of a tonnage not less than 5,000 and have a draught of from 20 to 21 feet. The speed of these steamers when loaded is to be 17 knots. Accommodations will be provided for 100 first-class passengers amidships, fifty second-class passengers aft and 200 passengers in the steerage. All the passenger accommodations, except, of course, the steerage, will be on the hurricane deck, and all the houses throughout are of steel. The vessels are to comply with the mail subsidy act covering second-class ships, and are built throughout of steel in accordance with the requirements and rules of the American Ship Masters' Association for the classification of vessels. Each of the new steamers will have a coal capacity sufficient for a continuous run of 4,000 knots. The propelling machinery will consist of two triple-expansion surface-condensing engines of the vertical marine type, designed to develop about 5,000 indicated horse power at ninety-five revolutions, with a working pressure of 160 pounds to the square inch, the boilers being of the Scotch type. The vessels are to have double bottoms throughout on the cellular plan. Work on these steamers is being rushed with all possible speed, and the expectation is that they will be ready to go into commission early in the new year. The New York & Cuba company has already resumed its service between New York and the island, and with these two new vessels will be well equipped for any demands that may be made upon it. Mr. Alfred G. Smith, secretary of the company, has gone to Vera Cruz and other points to complete arrangements for the resumption of service.



OUTBOARD PLAN OF THE WARD LINE STEAMERS, BUILDING AT CRAMP'S YARD, PHILADELPHIA.

An Interesting Old Chart.

A copy of a rare and interesting chart of Lake Superior was unearthed the other day in the office of Capt. George P. McKay, treasurer of the Lake Carriers' Association. The chart, which is on one sheet, was compiled in 1858 from United States and English government surveys by Parkinson & Smith, civil engineers of Buffalo. In those days the government did not furnish charts for the simple cost of paper and press work. The particularly interesting feature of the chart is the names of the men which appear thereon as endorsers. The names included are Benjamin Stannard, B. G. Sweet, John M. McKay, E. K. Tompkins, Charles Caldwell, John Spalding and Jay S. Childs. All these pioneers of the Lake Superior country are dead. Benjamin Stannard, who was for some time inspector of hulls at Cleveland, was best known as the master of the brig John Jacob Astor. The Astor was lost at Copper harbor. B. G. Sweet, who died at Toledo not long ago, was for a time in the Northerner and then in the North Star, both side-wheelers, which he brought out for the Turner brothers—Sam and Al—of Cleveland. Capt. John M. McKay, the father of Capt. George P. McKay, went up to the Sault in 1845. He was successively in command of the schooner Algonquin, the brig Napoleon and the side-wheel steamer Baltimore, and was in the steamer Independence when, in November, 1854, she blew up, near the Sault, with a loss of seven lives. After this accident Capt. McKay left the Sault for Lake Erie. E. K. Tompkins was known as master of the side-wheel steamer Planet, and Charles Caldwell for a time was in command of the steamer Manhattan. John Spalding was also in the Manhattan, and later in the Superior City, Northern Light and Lac la Belle, all brought out new for Hanna & Co. His last work was as superintendent of the Sault canal. Jay S. Childs was for years a forwarding and commission agent at the Sault.

A new twin-screw steamer of the Holland-American line, the Statendam, has just completed her maiden trip to this country. She is 530 feet long, 60 feet beam, 42 feet depth, and of 10,500 tons. She was built by Harland & Wolff of Belfast. The Holland-America line has three other twin-screw steamers building, all of 12,500 tons. These will be named the Potsdam, the Ryndam and the Noordam. The first is being constructed by Blohm & Voss of Hamburg, and the other two by Harland & Wolff. The line hopes to have them all in commission by the fall of 1899.

Channels in Georgian Bay to be Well Lighted.

Additional particulars regarding new aids to navigation in Georgian bay, entrance to Parry Sound, which were previously noted in the Review, as well as information regarding several proposed improvements, are contained in a lengthy notice to mariners soon to be issued by F. Gourdeau, deputy minister of marine. The Review has been favored with an advance copy of the notice. It is stated that the government has decided to efficiently mark the old or north channel, south of Pancake island and north of McClelland rock and Carling rock, and to abandon the marking of the new or south channel, north of Gordon rocks and south of Nias islands and Carling rock. Masters are advised to use the old or north channel, which is shorter, straighter and carries better water than the new channel. A gas buoy at Hopper island shoal will be moored in 3 fathoms of water, in the axis of the Jones island range lights, on the 15-foot patch north of the island. This buoy will show a fixed white light, which should be visible for 3 miles. Another gas buoy at Spruce island shoal is in 4 fathoms of water on the south extremity of the shoal, extending south from the island. A third gas buoy on Seguin bank is moored in 4 fathoms of water immediately south of the shoalest spot. If practicable, the spar buoy marking Knight shoal will be replaced by the platform buoy removed from Seguin bank.

It is proposed to remove the light-house now maintained on Hugh rock to the north portion of the highest part of Carling rock, during the present season of navigation, and to erect a light-house on the south extreme of Cousin island. These light-houses will mark the channel south of Pancake island and will lead from Hopper island shoal gas buoy to Spruce island shoal gas buoy and will also designate the turning points at Carling rock and Cousin island. It is also proposed to mark Davy rock by a black spar buoy, and the north end of the shoal off Carling rock by a red spar buoy.

The temporary range lights established last spring to mark the south channel at Gordon rock, and on Harold point to mark the channel between Carling rock and Cameron island, have been discontinued. The light-house on Depot island has been completed and was put in operation this week. The light is fixed white and visible 10 miles. New sailing directions, which will govern vessels in Parry Sound after the completion of the improvements at present under way, are as follows: Vessels entering by the north channel will leave the Jones island range alignment at the red gas buoy and steer directly for the black one, leaving it 200 feet on the port hand. They will then shape their course to leave Carling rock beacon or light-house 800 to 1,000 feet on the starboard hand. Inside of Carling rock Davy rock is the only hidden danger.

Reform in Lumber Handling.

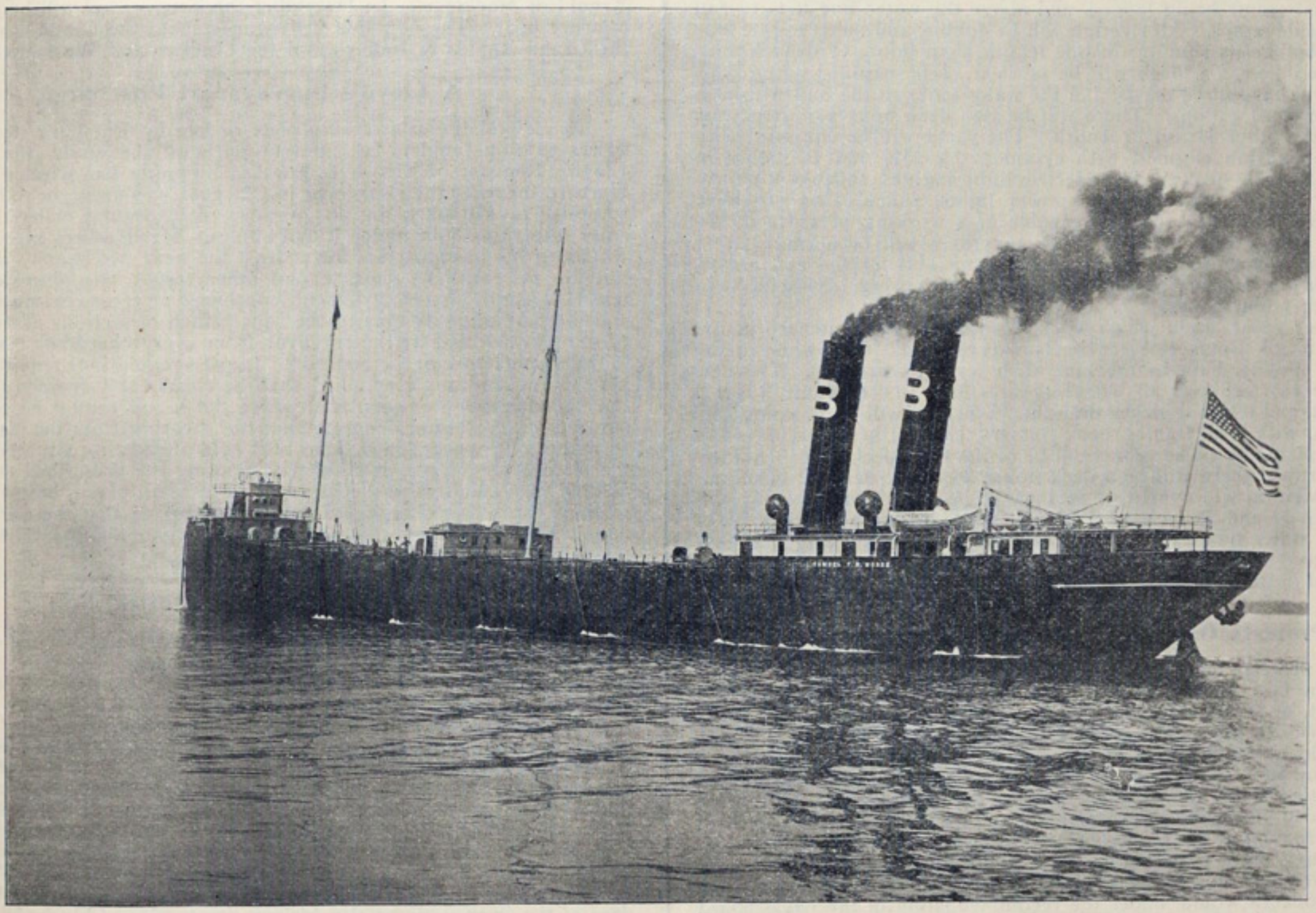
There is a probability that owners of vessels engaged in the lumber carrying trade on the lakes will this winter take up the matter of devising some plan of getting rid of the excessive charges for lumber handling under union rule. Should the lumber carriers hold a meeting for the purpose of organizing a new association, as has been suggested, the matter will undoubtedly claim attention when the proposed meeting for that purpose is held in January next. The plan at present advocated is to hire crews by the month with the understanding that they attend to the loading and unloading of the vessels, dispensing altogether with the services of lumber shovers. The matter is being talked up among owners of lumber vessels, on account of the unreasonable demands of the lumber shovers, who are now demanding 50 cents an hour at Duluth. On a cargo of say 800,000 feet the handling charges now amount to fully $500, whereas under the proposed plan of working the crews they would be cut down to $200. More time would, of course, be required in port, but the loss on this account would be made up in other ways. As proof of the unprofitableness of existing conditions, it is pointed out that a tow barge carrying 1,000,000 feet at $1.50 would receive in freight only $1,500, of which $500 would have to be expended for towing and $600 for handling charges at the two ends of the line. This would leave only $400 for harbor towing, provision bills, wages, insurance, etc. Under the plan of working crews in port a boat would require five days to load or unload, where three are now required, and the number of trips would be cut down from say twelve to eight or nine, but it is argued that this, too, would be beneficial, as it would in effect decrease the amount of tonnage in commission.

Largest Vessel on the Lakes.

A picture of the new Bessemer steamer Samuel F. B. Morse, which appears herewith, does not convey an idea of the size of the vessel, and is lacking also in other respects, but it is the best that has as yet been secured. The Morse is the largest vessel on the lakes and is the most powerful of the freight steamers. She is 476 feet over all, 456 feet keel, 50 feet beam and 29 feet depth. Engines are of the quadruple expansion type, with cylinders of 26½, 37, 54½ and 89 inches diameter, and a common stroke of 42 inches. There are four Scotch boilers, each of 13 feet 4 inches diameter and 11 feet 6 inches length, and allowed 200 pounds working pressure.

It will be readily understood from the foregoing brief summary of leading particulars of this vessel that she ought to take first rank among the lake freighters. She has been criticized from the standpoint that her load from Lake Superior, a trifle over 6,000 gross tons of ore, is not greater than that of vessels that are not her equal in dimensions. It was well understood when the Morse was under construction at West Bay City with two other big vessels (tow barges) that she was being built with more weight in all parts than probably any other vessel ever built on the lakes; that she was being made especially strong, and that some vessel men had pronounced her too heavy for lake requirements.

Mr. L. M. Bowers, general manager of the Bessemer company, said when this matter was spoken of, a few days ago, that he had heard the same criticism before the vessel was begun, when she was still on paper. It was the intention of the people whom he represented, however, to have nothing but the strongest kind of a ship; the best that could be built with a reasonable regard for capacity. The Morse had carried, he said, every pound that she was designed to carry. She was built to move 6,000 gross tons on the present Lake Superior draught, and she had done that. She was not built with a view to putting into her every ton of cargo that could possibly be moved in a hull of her dimensions. She was intended to tow a steel barge, the largest on the lakes, and probably two such barges, and the indications are that she will eventually tow two big barges at a rapid rate. On her second trip to Lake Superior with a towing wheel she made 14½ miles for a time, going up light, and when returning with ore she made 13½ miles all the way down. The chief engineer of the line was of the opinion, he said, that with another wheel suited to fast running the Morse would attain a speed of 17 miles. Her engines are still stiff, and it has not been found necessary as yet to work them up to anything like their full power. The problem of finding lines and attachments that would admit of two big steel barges being hitched onto this powerful steamer (the three carrying approximately 20,000 gross tons) did not seem especially difficult. The experiment would be tried. The steamer Stevenson, with the Roebling and Nasmyth in tow, had moved 17,490 tons of ore from Lake Superior only a few weeks ago. All weights were taken into account when the Morse was designed. Her gross displacement on 17 feet draught was figured at 10,500 tons. Take from this 4,125 tons representing weight of machinery, boilers and other parts, and the capacity of the ship in net tons on 17 feet is found to be 6,375 tons; add 260 tons for the excess of draught over 17 feet and we have 6,635 net tons. The Morse's last cargo was equal to 6,720 net tons.



LARGEST VESSEL ON THE LAKES—THE BESSEMER STEAMER SAMUEL F. B. MORSE.

Obstructions in the Rivers.

Vessel masters are again writing to George L. McCurdy of the Prime-McCurdy insurance syndicate, Chicago, regarding needed aids to navigation. Capt. C. B. Moiles of the tug Gladiator wrote regarding the replacing of the gas buoy that was carried away from Starve island reef, and in a letter received this week Capt. P. Dowdell of the steamer Neshoto says: "On August 29, 2:30 a. m., when a little below or abreast of Amherstburg, about 250 feet below the shoal, with the red light on the port side, bound down, the steamer Neshoto struck something which felt and sounded like a loose boulder. We were a trifle to the east of the red ranges. I headed my vessel a little to the west to keep her out of the way of two up-bound boats, and it was in this position she struck forward, just once. The Neshoto was drawing 17 feet 5 inches forward and 17 feet 1 inch aft, and was bound from Duluth to Erie loaded with iron ore.

Joseph Ripley, assistant United States engineer at Sault Ste. Marie, announces that a boulder shoal having an area of about 50 feet by 150 feet has been discovered between Gros Cap and Iroquois island. It lies 750 feet eastward of Bernard's ranges. The shoalest spot is marked with a horizontal striped buoy placed in 18½ feet of water.

Commander C. O. Allibone, inspector of the ninth light-house district, has given notice that a black gas buoy, showing a fixed white light, has been established in 5½ fathoms of water about 300 feet north of a sunken three-masted tow barge (the Winslow), which foundered during the night of Sept. 4, near White shoals, Straits of Mackinac, the buoy replacing a temporary black spar buoy established there on Sept. 11.

To Mark Another Shoal.

A petition to Commander Franklin Hanford of Buffalo, inspector of the tenth light-house district, was started in Cleveland this week, requesting the establishment of a gas buoy that will complete the lighting of the so-called middle passage, Lake Erie. The petition is as follows:

"The undersigned vessel owners and vessel masters respectfully direct your attention to the advantages that would be derived from the establishment of a gas buoy on Peach Orchard point, Lake Erie, and request that the same be established. A red spar buoy now marks this rocky point on the northeast end of Gibraltar island. Passenger traffic between Cleveland and Toledo is growing constantly, and numerous freight vessels, bound from lower Lake Erie ports to Toledo to load coal, are beginning to use the so-called middle passage quite generally, instead of going 25 to 30 miles out of their way to the northward, on account of a fear of shoals in the vicinity of the islands. The gas buoy recently established on Gull island reef has had much to do with this change, and if the lighting of the middle passage is completed by a gas buoy on Peach Orchard point, all vessels making ports up and down the lake will use this passage. It is necessary to have this point marked by night as well as by day. A light on this point would be seen from Ballast island by vessels bound up and it would open up the passage between Middle Bass island and South Bass island for vessels from Toledo, as well as for vessels from Detroit, that work in between Sugar island and Rattlesnake island."

TWO UP-TO-DATE YACHTS.

MODERN STEEL TWIN-SCREW VESSELS NOW UNDER CONSTRUCTION BY THE GAS ENGINE & POWER CO. AND SEABURY & CO., CONSOLIDATED, OF MORRIS HEIGHTS, N. Y.

The great number of steam yachts sold to the government at the beginning of the recent war has resulted in considerable activity in the matter of the awards of contracts for new vessels of this class. Two yachts which embody in their design ideas that indicate the highest development of modern yacht construction are now building at the works of the Gas Engine & Power Co. and Seabury & Co., Consolidated, of New York. The first of these yachts is for Mr. John P. Duncan of the New York yacht club, and was designed by Mr. Charles L. Seabury to replace the Kanawha, which Mr. Duncan sold to the government. The boat now on the stocks is 225 feet over all, 192 feet on the water line, 24 feet beam, 14 feet depth and 10 feet draught, loaded. According to the stipulations of the contract, the vessel must maintain a speed of 20 miles per hour during a trial of two consecutive hours. The frames will be of angle steel, spaced 23 inches, and will be 3½ by 3 inches in size through the main body of the yacht and 3 by 2½ inches through the forward and after sections. Reverse frames, also of angle steel, will be 3 by 2 inches through the main body, and 2½ by 2 inches in sections forward and aft. The plating is to run in fair lines with in and out strakes below the water line, the horizontal seams being lapped, and above the water line it is to run flush with inside straps. All riveting will be double, and there will be four water-tight bulkheads running in one length from floors to deck beams, wherever possible. The deck will be of clear, well seasoned white pine. The yacht will have three masts, and the water tanks in the hull will have a capacity of 6,000 gallons. There will be two deck houses of steel, one 40 feet and the other 24 feet in length. The yacht will be equipped with two triple expansion engines, with cylinders 14, 23¾ and 43 inches in diameter by 24-inch stroke. Two electric light engines, capable of generating power for 150 sixteen-candle power lights, will also be provided. Four Seabury water tube boilers, capable of a working pressure of 250 pounds per square inch, will be fitted, and there will be a small boiler for furnishing steam for the electric light plant and for the evaporator, which will have a capacity of evaporating and condensing 1,200 gallons of water in twenty-four hours.

The other yacht, upon which work has just been commenced at the same yard, is for Louis Bossert of Brooklyn, N. Y., the owner of the steam yacht Mayita, built by the same firm several years ago. The new craft will be 135 feet over all, 110 feet water line, 16 feet beam, 9 feet 6 inches depth, and 6 feet 6 inches draught. The hull will be of composite construction, with steel frames, deck timbers, clamps, keelsons, etc., and yellow pine planking. The vessel will be of the flush deck type, schooner rigged. Forward there will be a deck house 26 feet in length. The machinery installation will consist of Seabury triple expansion engines, with cylinders 8½, 14 and 23 inches by 12-inch stroke. The boiler will be of the Seabury water tube type, and allowed 260 pounds working pressure. The guaranteed speed of the vessel will be 16 miles. Both vessels are to be completed in time for use next spring.

Protests Over the Torpedo Boat Contracts.

Formal protests have been filed with the navy department at Washington by the Gas Engine & Power Co. and Charles L. Seabury & Co., Consolidated, of Morris Heights, N. Y., against the consideration of the bids for torpedo boats and destroyers submitted by the Richmond Locomotive Works (John R. Trigg of Richmond, Va.,) and by the Herreshoff Co. of Bristol, R. I. Objection is made to the bid of the Richmond firm on the plea that it was informal, the bidders failing to use the blank proposals provided and making no statement as to whether it is proposed to use the government or the bidder's plans. The protest against the Herreshoff company's bid is based on its late delivery, the proposal having been handed in over four hours after the time set for the opening of bids. The Richmond concern would, under the recommendation of the naval board of construction, be given a contract for three torpedo boats and two destroyers and the Herreshoffs a contract for two torpedo boats, but the protest will, of course, delay the awards. The Gas Engine & Power Co. and Seabury & Co., Consolidated, did not receive a contract but were favorably considered and would undoubtedly receive a contract were it necessary to cancel the recommendations for either of the other firms. A story was circulated in Washington that Mr. Trigg's bid was speculative and that he intended to sell it for $100,000, but this he has emphatically denied, reiterating his intention to establish a ship building plant at Richmond.

It is certainly strange that there should be any disposition in Washington now to accept the bid of the Herreshoffs, in spite of the fact that it was received several hours after the opening, and in view also of the numerous instances, in the navy as well as in other departments, of the government ruling out bids that were received after the time of opening. If the Herreshoff bid is accepted, contrary to the spirit of entire fairness that has always characterized the letting contracts for naval vessels, the Rhode Island firm will build two torpedo boats, which will be taken from the Richmond Locomotive Works and the Bath Iron Works, who will build three boats each instead of four.

The consolidation of the Engineer, published in New York, and the Scientific Machinist, published at Cleveland, is announced. Both were excellent publications. As the two journals were devoted largely to the same engineering interests, and the periods of issue were the same (semi-monthly), the work of combining the publications presents no difficulties, and the move should prove advantageous to patrons of both.

John McDowell, for some time associated with the Chicago Ship Building Co. and later assistant foreman at the Roach ship yard, Chester, Pa., has been appointed superintendent of iron and steel construction at the yard of the Harlan & Hollingsworth Co., Wilmington, Del.

Around the Lakes.

The Cleveland Steel Canal Boat Co., operating between New York and Cleveland by way of the Erie canal and Lake Erie, is carrying 1 per cent. of all the sugar consumed in the United States.

Mr. Frank E. Kirby of Detroit is still engaged, under direction of the secretary of war, looking after the interest of the government in connection with the charter and purchase of a large number of vessels that were used for transports during the war.

Capt. Alexander Ruelle, Sr., of Detroit, who has been in ill health for some time past, has disposed of his interest in the Ruelle harbor tug line of Detroit to Alexander Ruelle, Jr. The company's fleet consists of the tugs C. A. Lorman, I. L. Miner and Grace Ruelle.

Maj. T. W. Symons, United States engineer at Buffalo, has issued, with the sanction of the secretary of war, a set of rules providing that hereafter no vessels shall anchor in the entrance channel to Buffalo harbor or be moored at the south pier, or at the north pier abreast any other vessel.

Officials of the Crosby Transportation Co. of Milwaukee, at a meeting held this week, perfected arrangements for the establishment of a new steamboat line from Sheboygan and Manitowoc to Grand Haven and Muskegon. The line will be opened Oct. 1 with the steamers Wisconsin and Nyack, now operating between Milwaukee and Muskegon, and the steamer Minnie M., which has been chartered from Capt. George Arnold of Mackinaw. In December the latter vessel will be replaced by a larger boat. The new line will connect with the Grand Trunk system, the Grand Rapids & Indiana and the Chicago and West Michigan lines.

A Lloyd's Surveyor at Pittsburg.

In view of the sale of ship plate of late by Pittsburg steel manufacturers to ship builders in different parts of the world, the Society of Lloyd's Register of British & Foreign Shipping has selected Mr. G. O. Herbert, formerly their surveyor in Glasgow, as a surveyor to be regularly stationed at Pittsburg for the purpose of inspecting material that is to enter into ships built under Lloyd's rules. Mr. Herbert expects to make Pittsburg his headquarters for at least the next two years. He will submit the ship steel to physical and other tests. The ultimate minimum tensile strength of steel strips cut lengthwise or crosswise must be 28 tons and the maximum 32 tons to the square inch of section. Tests are to be of samples selected by the surveyor from every charge or cast employed in the manufacture of the material. Lloyd's regulations require that every plate, beam and angle supplied shall be clearly and distinctly marked by the manufacturer in two places where the brand cannot be conveniently sheared off, the brand denoting that the shearing from the plate or angle so marked has successfully been bent cold after being tempered, and that the plate or angle is capable of withstanding the prescribed tests. Every facility must be afforded the surveyor to trace all plates, beams and angles to their respective charges. It is now estimated that the Carnegie company's foreign orders for ship material aggregate about 1,000 tons monthly, which will approximate $300,000 annually.

Spun Yarn—Sea Stories.

Spun Yarn, by reason of its novelty, is sure to prove one of the most attractive volumes of fiction of the year. Morgan Robertson, the author, has been a sailor on the great lakes and on salt water as well, and it is the thorough technical knowledge of the subject and familiarity with sailor nomenclature displayed which constitute, perhaps, the most distinctive characteristic of his work. Robertson has confessed very gracefully that he owes his literary ambition if not inspiration to the chance perusal of one of Kipling's striking sea tales, and certainly the famous writer of Indian stories has no reason to disclaim his pupil, for while in no sense reminiscent of Kipling's work, the stories of this new author still possess features that are in a way quite as unique. The Robertson stories—and they are good stories—are sufficiently varied in character to satisfy the most exacting of readers. There are stories of the great lakes, of the days of the slave trade on the African coast, tales of blockade running in the civil war, and of filibustering expeditions in the interest of Cuba Libre, and they are all told in a uniformly strong, forceful manner, that takes hold of the reader and fastens his attention and holds his interest undiminished to the end. The book is attractively bound and handsomely illustrated. Published by Harper & Bros., New York.

Major General Ludlow, U. S. V., recently promoted for distinguished service in the field, is the same army officer who made a great number of friends among vessel men on the lakes, while acting as engineer of one of the lake light-house districts, with headquarters at Detroit. He will be remembered particularly on account of the controversy brought on with the light-house board over the lighting of St. Mary's river. His latest promotion is due to the fact that he directed the last movement that closed the Spanish forces in the city of Santiago, marching his command boldly out into the open meadows across the only remaining means of exit for the garrison.

Two or three big ship building enterprises have been talked of in New York papers for several days past. Chauncey N. Dutton, of pneumatic canal lock fame, is mentioned as the promoter of one of them. His company is to have a steel works, as well as a ship yard, in New York harbor and make the ship direct from cheap Cuban ore. Little attention will be paid to reports of this kind, but it can be said positively that one of the New York ship yard enterprises is of a substantial kind and full particulars of it will be given out shortly. It will be no small affair. Ship yard, engine works, boiler works, etc., will all go in at once.

Capt. Alfred Mitchell of Cleveland, who recently made a trip to the St. Lawrence on one of the vessels of the Toledo-Cleveland-Ogdensburg line (Badger State and Empire State) says that the service is more generally satisfactory than that of any steamboat line on which he has ever traveled.

COAST DEFENSE MONITORS.

THE ARKANSAS, CONNECTICUT, FLORIDA AND WYOMING, FOR WHICH BIDS WILL BE OPENED BY THE UNITED STATES GOVERNMENT ON OCT. 1.

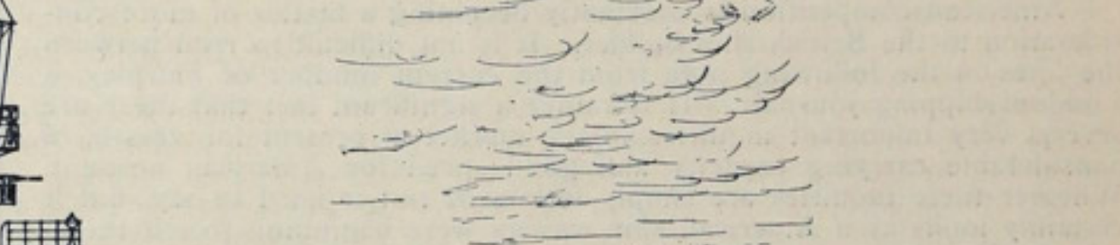
The United States revolutionized naval construction and methods in 1861, and it has been revolutionizing them ever since. It is true other nations have been progressing more rapidly numerically, but scientifically in hulls, machinery and armaments the United States naval constructors have more than kept pace with the world. The experiences of the war with Spain have suggested new departures. The ships of the future additions to the American navy will be a marked advance on former designs. The naval program for 1898-9, under the act of May 4, 1898, provides for three first-class battleships, four coast defense monitors, twelve torpedo boats and sixteen torpedo destroyers. The four harbor defense monitors called for, and for which bids will be opened Oct. 1, will present some of the most radical advances in the modern fighting machinery. The monitor principle has always been distinctively American. There are many who regard them as the best all-round warship yet designed. The act of congress limits the cost of these four harbor defense vessels to $1,500,000 each. The limit of time of completion is twenty-seven months, with penalties of from $300 to $600 a day for failure.

The navy department, in the construction of this class of vessel, securing the greatest results at the least expenditure of money, has in view not only the securing of the mainland harbors of the United States, but also of its island possessions in the Atlantic and Pacific oceans. The design for the monitors, which have been named the Arkansas, Connecticut, Florida and Wyoming, was prepared by Chief Constructor Hichborn. It was decided that the best all-round arrangement that could be made with the available appropriation was that with a single balanced turret on the center line forward, containing two high-powered 12-inch breech-loading rifles, a gun that has just been designed to be used with smokeless powder, and four 4-inch rapid-fire breech-loading rifles, also to be used with smokeless powder, completes the main battery. The secondary battery will consist of three 6-pound rapid-fire and four 1-pound automatic rifles.

The general characteristics of the monitors will be: Length on load water line, 225 feet; breadth at water line, 50 feet; mean draught at normal displacement, 12 feet 6 inches; normal displacement, about, 2,700 tons; total coal capacity, loose stowage, 200 tons. The hull is to be of steel, not sheathed, with double bottom and close water-tight subdivisions. There will be one military mast fitted with fighting and search-light tops. Seven boats are to be stowed clear of the blast of the guns, two being the lifeboats, which are to be carried at davits so as to be quickly lowered. The protection of the hull against injury to the water line region is to be afforded by means of a side armor belt, the maximum thickness being 11 inches, tapering to 5 inches at the armor shelf, the depth being 5 feet. The maximum thickness is abreast the engine and boiler spaces; from thence forward and aft it is reduced by steps to a minimum thickness of 5 inches at the bow and stern. The barbettes for the 12-inch guns will have armor about 10 inches thick. The turret is of the Hichborn balanced type, with front plate inclined 42 degrees from the vertical. The side plates of the turret armor are to be 9 inches thick. The main or protected deck is to extend throughout the length of the vessel, to be worked flat. The total thickness will be one and one-half inches. A conning tower of seven and one-half inches in thickness having an armored communication tube, 3 inches in thickness, will be carried in a suitable commanding position forward, the tube extending to the armor deck and affording protection to the voice tubes, bell wires, etc.

The vessel will be driven by twin screws. The engines will be rights and lefts, placed in a common water-tight compartment. They will be of the vertical inverted cylinder, direct-acting, triple-expansion type, each with a high pressure cylinder 17 inches, an intermediate pressure cylinder 26¼ inches, and a low pressure cylinder 40 inches in diameter; the stroke of all pistons being 24 inches. The collective indicated horse power of propelling and circulating pump engines will be 2,400 when the main engines are making about 200 revolutions per minute, with a steam pressure of 250 pounds in the boilers, reduced to 200 pounds at high pressure cylinders. The propelling engines will be placed in one water-tight compartment. The high pressure cylinder of each engine will be forward and the low pressure cylinder aft. The main valves will be of the piston type for the high pressure and the intermediate pressure cylinders, and the low pressure cylinders will have slide valves, all worked by Stephenson link motions with double bar links. The valve gears will be made interchangeable as far as practicable. There will be one piston valve for each high pressure cylinder and two for each intermediate pressure cylinder, and one slide valve for each low pressure cylinder. Each main piston will have one piston rod, with a crosshead working on a slipper guide. The framing of the engines will consist of forged steel columns in front; the back columns will be of cast iron.

The engine bedplates will be cast steel, supported on the inner bottom. The crank shaft for each engine will be forged in two pieces, the shaft for the high and intermediate pressure cylinders forming one, and the shaft for the low pressure cylinder the other piece. All crank, thrust and propeller shafting will be hollow. Any system of balancing the rotating and reciprocating parts will be taken into consideration by the bureau of steam engineering. The shafts, piston rods, connecting rods, valve rods, eccentric rods, and working parts generally, will be forged nickel steel. The back columns will be cast in one piece with the condenser sections, and each condenser will have a cooling surface of 1,612 square feet, measured on the outside of the tubes, the circulating water passing through the tubes. There will be a vertical single-acting air pump worked from the crosshead of each low pressure cylinder. The main circulating pumps will be of the centrifugal type, one for each main condenser. The auxiliary condenser will have 450 square feet cooling surface, and it will have a combined air and circulating pump. The propellers will be rights and lefts, of manganese bronze or approved equivalent material.

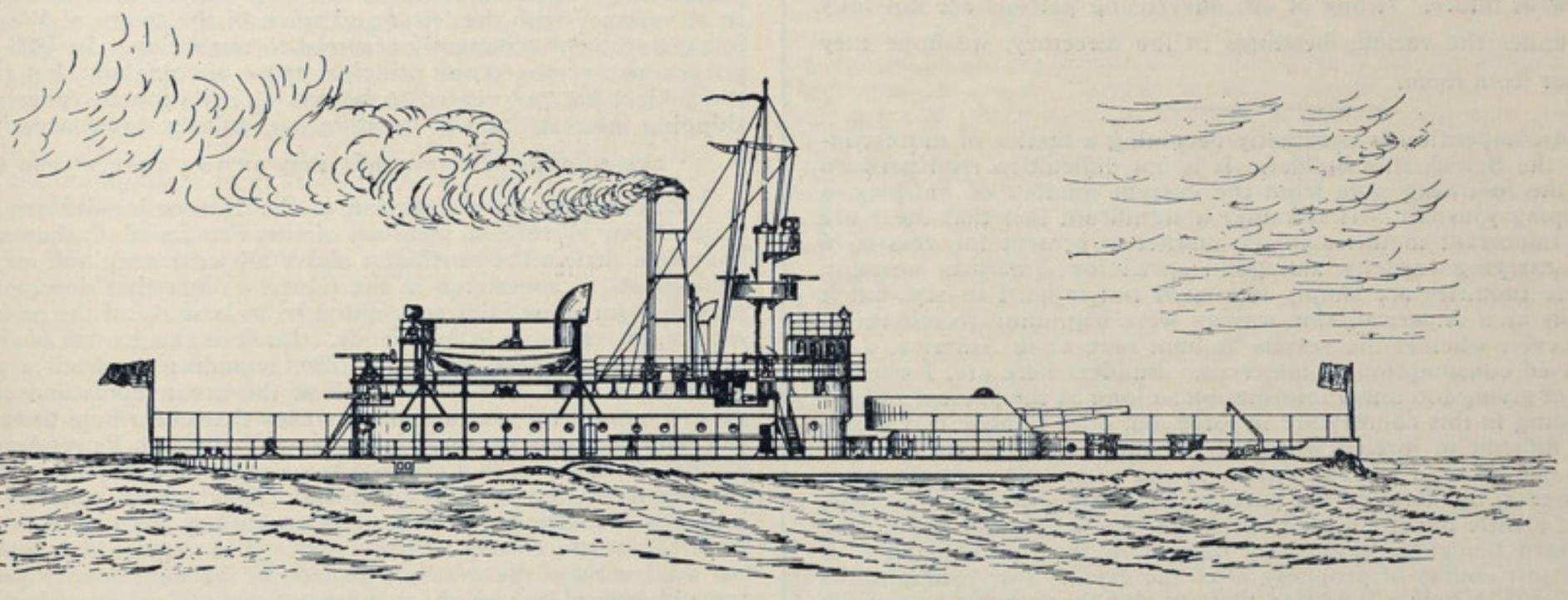


DECK PLAN OF COAST DEFENSE MONITORS.

There will be four water tube boilers, constructed for a working pressure of 250 pounds per square inch. The total grate surface will be at least 200 square feet, and the total heating surface about 8,800 square feet. The boilers will be in one compartment, with a fore-and-aft fire room amidships. There will be one smoke pipe for all the boilers. There will be two main feed pumps in the boiler compartment, one on each side; two auxiliary feed pumps located in engine room on forward bulkhead, two hot-well pumps, one fire and bilge pump, one water-service pump, and a bilge pump for each engine, worked by an eccentric on the main engine shaft. The forced draft system will consist of two blowers, discharging into an air-tight fire room. The air for combustion will be heated by the hot gases, circulating among or through tubes arranged in the uptakes, or in the upper part of boiler casing, and will be conveyed through ducts, fitted with dampers, to closed ash pits. There will be steam reversing engines, steam windlass, steering engines and boat winches, ash hoist, turning engine, auxiliary pumps, engine for workshop machinery, evaporators and distillers, and other auxiliary or supplementary machinery, tools, instruments and apparatus.

The total weight of machinery, not including turret turning machinery, capstan, windlass, steering gear, or winches, is limited to 240 tons. Fifty tons of water for steaming purposes must be carried in the double bottom. These vessels will have staterooms in addition to one for the captain, for six officers, and require a complement of crew of 125, for whom ample berthing space has been provided. Store rooms are provided for one month's supply of clothing, contingent and small stores. The electric generating plant will consist of four units, each unit to have an engine, dynamo and compensation bed plate, and each dynamo a rated output of 400 amperes of 80 volts. The turret-turning gear, ammunition hoists, elevating gear, rammers and ventilating apparatus will be operated by electricity. The estimated speed of the vessel is to be 12 knots—amply sufficient for a harbor defense vessel. All wood used in the construction of the vessels will be fire-proofed. The vessels will be fitted with docking keels, which will also serve the purpose of bilge keels.

These harbor defense monitors, which will have all the latest improvements known to naval science, will be important additions to the navy, and, being small, with large accommodations for crew for vessels of their size, they will be valuable for the use and instruction of the naval militia.



THE NEW COAST DEFENSE MONITORS FOR WHICH BIDS WILL BE OPENED OCT. 1.

MARINE REVIEW

Devoted to the Merchant Marine, the Navy, Ship Building, and Kindred Interests.

Published every Thursday at No. 418-19 Perry-Payne building, Cleveland, Ohio. by John M. Mulrooney.

SUBSCRIPTION—$2.00 per year in advance. Single copies 10 cents each. Convenient binders sent, post paid, $1.00. Advertising rates on application.

Entered at Cleveland Post Office as Second-class Mail Matter.

Our readers will, we trust, pardon the use of a few lines in reading matter space to call attention to another improvement, namely, the permanent addition, beginning with the current number, of four pages to the size of the Marine Review. This increase has been necessitated by the exactions of increasing demands upon our advertising space, but our readers will also be benefited by the provision of additional space for text and illustrations. A part of the new space is devoted to a directory of Marine Review advertisers. In this directory, arranged for ready reference, will be found names and addresses of manufacturers and supply houses that furnish everything entering into the construction or connected with the operation of a ship. This directory will be a permanent feature of the Review in future. If any of our advertising patrons are not fully represented under the various headings in the directory, we hope they will let us hear from them.

American competition is constantly becoming a matter of more consideration to the British ship builder. It is not difficult to read between the lines in the following note from the current number of Fairplay, a London shipping journal: "It is rather a significant fact that there are several very important inquiries in the market at present for vessels of considerable carrying capacity and good speed for American account. Whether these inquiries are simply feelers or not is hard to say, but it certainly looks as if American ship owners were beginning to stir themselves. However, whether the vessels be built here or in America, it all means increased consumption of materials. Builders here are, I believe, rather chary of giving too much information so long as the present restrictions on building in this country are in force, but once remove this obstacle and it is difficult to foretell what may be the result. Some consider that builders should send representatives to the other side. At the present time, however, builders are not particularly anxious to book forward, as things are a little uncertain, and, although twelve months hence may see a downward tendency, much may happen in the interim, and it is always the wisest course of prophesy after the event. For example, the pig iron market is in such a condition that any day there might be a smart upward movement, as it is becoming known that there is a scarcity of pig iron, and once the tide turns prices may go up very much higher than they are at present. This, coupled with the higher prices which are sure to be demanded for coke and coal over next year, will certainly have its effect on the price of ships, and higher prices may be anticipated for some time to come. I believe there are still good inquiries in the market, and if builders could only hasten deliveries there is plenty of work to look forward to." If the prediction of the London journal relative to an increase in the price of pig iron, coal and coke be fulfilled there will be found therein an added advantage for the American ship builder, who is not likely to be handicapped by much of an increase in the cost of any of these commodities.

One of the old coast revenue cutters, the Morril, is now at the Norfolk navy yard undergoing repairs and alterations that will necessitate an expenditure of $10,000, preparatory to being sent to the great lakes for service in lieu of the cutters Gresham, Algonquin and Onondaga, taken to the coast under orders issued during the war. The Morril, whose maximum speed is 11 knots, will be stationed at Milwaukee. Quite a fuss is being made in the newspapers about the lakes losing the Gresham and other revenue cutters recently built at Cleveland as a result of the war, but it is not probable that the ship masters or vessel owners are bothering themselves much on this score. Revenue cutters are certainly not of very much use on the lakes. They do a little in the way of police duty, but aside from this they are more ornamental than useful. The lake ship builders would, of course, be pleased to secure orders for more new cutters, and they are not objecting to having the vessels that went to the coast remain there.

A private letter to a gentleman prominently identified with lake shipping interests would indicate that there is little likelihood of the light-house tender Laurel being detailed for service on the lakes in accord with the plans mapped out just previous to the outbreak of the war. The Laurel has been detailed for service in the third district. It is said that Naval Secretary Ackley of the light-house board is not disposed to provide a vessel for service on the lakes until he can have one built especially for the purpose, sheathed and capable of breaking ice. This does not meet with any considerable degree of approbation from lake vessel men who helped officials of the light-house service to secure a large buoyage appropriation from the last congress, in order that more gas buoys might be obtained. The vessel men argue that with the large number of vessels of the auxiliary fleet now out of commission, it should be possible to send some sort of a vessel to the lakes immediately, even were it only as a temporary arrangement.

FOR THE REMOVAL OF CANAL TOLLS.

PLEA OF THE LAKE CARRIERS' ASSOCIATION TO THE COMMISSION FOR THE ADJUSTMENT OF QUESTIONS OF COMMERCIAL DIFFERENCE WITH CANADA—A STRONG DOCUMENT.

Officials of the Lake Carriers' Association have about given up all hope of securing an oral hearing on the subject of abolishing Canadian canal tolls, to which they desire to direct the attention of the United States and British Joint High Commission, now in session at Quebec, and they have therefore forwarded a strong brief on the subject to the United States commissioners. Mr. Harvey D. Goulder, council of the association, and Mr. C. H. Keep, secretary, assisted the regularly appointed committee in preparing the brief, which is as follows:

To the Honorable United States High Commissioners: The Lake Carriers' Association comprises 700,000 documented (net) tons of shipping, includes, with one exception, every important business fleet on the lakes, with an investment in ships exceeding $50,000,000, and so fairly represents the lake business of transporting during the season of navigation about forty million tons of freight. This is carried such long distances as to make the service, measured in the usual manner by ton-mileage, equal to fully one-third the ton-mile service of all the railroads of the United States. The vessels are in size from the steel vessel 500 feet long, carrying 8,000 net tons of cargo, to the small schooner 150 feet long with a capacity of 500 or 600 tons, and are owned all the way from Ogdensburg on the St. Lawrence river, to Chicago and Duluth at the head of lake navigation.

The matter of the tolls on the Canadian canals has been the subject of complaint by the United States for many years back. Two special messages have been sent to congress, one by President Cleveland in 1888, and one by President Harrison in 1892. In 1892 the system on which the Canadian government imposed the tolls was deemed by our government so at variance with the letter and spirit of the treaty of Washington, that our government reluctantly resorted to retaliation. In 1893 the Canadian government removed one principal cause of complaint, but since that date the subject has not ceased to be one of irritation to American ports and shipping interests, as will be more particularly stated hereafter.

DEPENDENCE OF THE NORTHWEST ON THE LAKE WATER ROUTE.

Speaking at the convention of the International Deep Water Ways Association in 1895, a member of the Provincial Parliament said: "I have said that in the northwest above all we are to look for the chief developments of commerce in the future. What that development may be we can form some faint conception of by a study of the past. The whole country, I repeat, is in its infancy. Look at the growth of the great cities of the lakes between 1880 and 1890, bounding up from a population of 1,300,000 to over 2,500,000. Look at the great towns and cities growing up throughout the states and provinces that contribute to this traffic. In the American union apart from New York and Pennsylvania there are sixteen great states that are to a large extent dependent on the lake route for transportation of their products. They are all states in which population is increasing and industries extending from year to year. But it is in the northwesterly of these states, tributary to the upper lakes, that we shall witness the greatest growth in the next twenty years. And let me add a word or two about the great expansion in production and commerce that we are sure to witness in the great and rich northwest of Canada. To the capabilities of that country in the way of sustaining a great population and developing a most extended trade, considerable attention has lately been paid. * * * The province (Manitoba) is in the very earliest infancy of its growth; not one-tenth of its rich arable lands are under cultivation; its grazing lands, still unoccupied, are almost boundless in extent. To the west and northwest of Manitoba extends the great Canadian territory, rich beyond description in prairie and grazing land, a country destined in the future to be the home of millions. We do not mind making the admission, however, that in the meantime population is coming in but slowly, and we realize that one of the considerations that discourage more rapid settlement is the great cost of transportation to and from the markets of the world. The question of cheaper transportation is the question of questions for the Canadian as well as the American northwest. Solve that problem and the advantage to the country as well as the expansion of its commerce, will be marvelous."

This is but the counterpart of many expressions by commercial bodies and by individuals, not alone in the northwest which, as a section, is most deeply interested, but by thinking men throughout both countries who have considered this great system of waterways, furnishing through more than two thousand miles of its extent the boundary between two great nations.

DEVELOPMENT OF THE TRAFFIC.

The volume of traffic on the Great Lakes has undergone a revolution in the past ten years. Vessels have increased enormously in size. Ten years ago a vessel carrying 3000 tons was the largest, and it was said that the limit of size of lake vessels had been reached. Even then smaller vessels transporting 1500 to 2000 tons complained that their usefulness had passed, and the value of such property was destroyed. Now vessels are being turned out every month carrying from 6000 to 8000 net tons of cargo. Vessels which cost $200,000 each and which were built to carry 2500 to 3000 tons of cargo find themselves in competition with vessels, built only a few years later at almost the same cost, carrying nearly three times as much. These changes have been brought about very largely by the work of the United States in deepening and improving the channels west of Buffalo. They have resulted in vast benefit to the shippers and farmers of the West, have reduced the transportation charges, enormously increased the volume of business, but have wiped out the margin of profit for hundreds of fine vessels. These vessels, mostly owned by private individuals or small companies, on both sides of the boundary line, and representing an investment of fully $20,000,000 find themselves at their wits end to pay expenses in the lake carrying trade.

But the increase in volume of business and in building ships of great size to accommodate it goes on, and there is still the cry from the West

and Northwest for further improvement of the water ways and facilities to carry the products of the farm to the seaboard. The receipts of grain (including flour) at Buffalo alone increased from 163,000,000 bushels in the season of 1895 to 258,000,000 in the season of 1897. It is no infrequent thing, especially in spring and fall, to have a literal blockade of grain at Lake Erie ports, where, by reason of inability of the elevators to handle and of carriers to take away the grain, vessels are kept for many days waiting an opportunity to discharge cargo. There is need to utilize every outlet from the great lakes to the sea.

The Canadian government, besides the enlargement of the Welland canal, the only water communication between Lake Erie and Lake Ontario, has continued its work along the St. Lawrence river and is nearly ready to open a system of canals to commerce with locks and draught of water equal in capacity to those in the Welland canal; about 275 feet in length, with available draught of 14 feet, and which will accommodate vessels carrying as high as 80,000 bushels of wheat. The smaller vessels on the lakes think that they should be permitted to utilize the Lake Ontario route, but find themselves (here only in all the grand lake waterway) confronted with a system of tolls which is practically prohibitory.

RECIPROCITY ONLY IS ASKED.

Meantime the United States, in addition to all its former works, has nearly completed an expenditure of $15,000,000 altogether for locks in the St. Mary's river, and has established artificial channels in St. Mary's, St. Clair and Detroit rivers and through Lake St. Clair, including the St. Clair Flats canal and the great improvement through solid rock at Lime-Kiln crossing, and by these improvements has increased the available draught of water for vessels throughout the lakes west of Buffalo from a former draught of 15 feet to 18 feet at the present stage of water. It has purchased from a private company the Portage Lake canals through Keweenaw peninsula, Lake Superior, and spent hundreds of thousands of dollars in improving them. Moreover, as these improvements have gone forward, vessels making use of the increased draught of water have been compelled to hold to the channels more closely in many unimproved parts of the rivers. To aid them in doing so, the United States government has built and maintains many sets of range lights on the American side of the river, and has established nearly thirty gas buoys to mark turning points and shoal spots in the channels. The Lake Carriers' Association has maintained for years private lights at an expense running from $5,000 down to their present expenditure of about $3,000 per season. All of these canals and artificial channels and improvements, the vast lighthouse establishment of more than 500 lights, eighty-five fog signals, and about 700 buoys, and the life saving establishment of the United States on the great lakes are free and have been used as freely by Canadian vessels as our own without charge of any kind. As against this, the Canadian government permits the free use of the Canadian canal lock at the Sault, where the United States already has two immense locks, and the use of the Canadian lighthouse establishment on the lakes, which, especially in those places which must be used in common, are slight as compared with our own. Some of the improvements by the United States are said to be partly in Canadian waters, and the only private lights heretofore paid for by the Lake Carriers' Association, which the government of the United States has not taken off our hands, are located on the Canadian side. The Straits of Mackinac and both shores of Lake Michigan, with a coast line of a thousand miles, are wholly within the territory of the United States, and there as elsewhere every channel improvement, light and aid to navigation is as free to Canadian vessels as to our own, and they are freely used by vessels owned or operated by Canadians.

REQUEST OF THE LAKE CARRIERS' ASSOCIATION.

In view of these facts and of the burdensome and even discriminating character of the tolls upon our vessels as explained below, the smaller vessels complain that it is but fair of our government to ask the Canadian authorities to permit them the use of the Canadian canals, at least of the Welland canal, without payment of prohibitory tolls. These smaller vessels could find in the Lake Ontario and St. Lawrence river trade, by carrying grain to Ogdensburg, Kingston or Montreal, and in returning with coal from Oswego and Charlotte, a valuable and extensive field for carrying, in which, while they would indirectly meet the competition of the large vessels through other routes, they would be free from the direct competition of the large boats, which would be unable to pass through the Welland locks and to transact business at the ports above named. The abolition of the tolls would enable lower freights to be made on business to the seaboard via the Lake Ontario route to Ogdensburg or the St. Lawrence route to Montreal. Lower charges would inevitably increase the volume of the business flowing through this outlet, and the western shipper and producer would divide the benefits with the owner of the moderate sized vessels engaged in this branch of the business.

The tolls which the Canadian government imposes at the Welland canal are very burdensome and oppressive. They were formulated years ago when lake freights were high and the margin of profit in transportation much larger than now, and the great and increasing competition of other routes to the seaboard, whether by lake and rail through Buffalo or all rail from the western shipping point to Newport News, Galveston and other seaboard ports, was much less severe. The tolls on grain are 10 cents per ton; on flour 20 cents per ton and on coal 20 cents per ton. When it is remembered that coal has been shipped from Buffalo to Chicago, and from Buffalo to Duluth, during a large part of the past three seasons of navigation at a gross freight of 20 cents per ton, it is manifest that coal could not be profitably shipped from Lake Ontario ports to Chicago and pay canal tolls equal to the entire freight from Buffalo to the western port. The canal tolls on wheat and corn are about one-third of one cent per bushel. Corn has been carried by vessels in enormous amounts from Chicago to Buffalo this season at ¾ cent per bushel freight. The following example of the gross earnings and canal tolls of actual cargoes passing through the Welland canal will show how burdensome the tolls are, and how large a proportion of the gross earnings of a vessel are paid out for tolls.

The Steamer John Rugee, capacity 51,000 bushels on Welland canal draught, carried a cargo of grain eastbound from Chicago through the canal to Ogdensburgh at a freight rate of 1¾ cents a bushel. She got a return load of coal from Ogdensburg to Chicago at 45 cents per ton. The earnings of the vessel were as follows: 51,000 bushels of corn at 1¾ cents per bushel, $892.50; 1260 gross tons of coal at 45 cents per ton, $567.00; total earnings of round trip, $1,459.50. Welland canal tolls on grain cargo, $142.50; Welland canal tolls on coal cargo, $252.00; total, $394.50, or about 27 per cent. of the gross receipts. The freights were necessarily fixed by the competition with other routes, and the vessel made her round trip at an actual loss, failing to pay her operating expenses.

DISCRIMINATING CHARACTER OF THE TOLLS.

It is not the wish or purpose of the Lake Carriers' Association to lay stress upon the details of the system upon which the tolls are imposed. In 1892 the United States authorities complained that the canal tolls then in force by which 20 cents a ton was paid on grain eastbound through the canal, and where the grain continued to Montreal a rebate of 18 cents on the tolls was made, while grain destined for Ogdensburg received no rebate, were so discriminating against citizens of the United States as to constitute a violation of that provision of the treaty of Washington, whereby provision was made "to secure to the citizens of the United States the use of the Welland or other Canadian canals on terms of equality with the inhabitants of the Dominion of Canada." The rebate regulation was revoked by the Canadian authorities early in 1893, and the United States authorities immediately abrogated the tolls on vessels and cargoes at the St. Mary's Falls canal. Nevertheless it is a fact that the rebate clause was not the only clause which was complained of by our citizens at that time, and that the other grounds of complaint remain in existence to the present time. For example, at the present time the tolls on grain are 10 cents a ton. Grain is a valuable product. In the case of wheat it is worth approximately to-day $20 a ton. On the other hand, anthracite coal, a low priced product, worth only $3.50 per ton wholesale at port of shipment, is charged a toll of 20 cents through the canal. In the expense of passing the cargoes through the canal there is of course no difference between grain and coal. The higher priced product would seem to be the one which should pay the highest toll. Why then is the toll on anthracite coal twice that on grain? Simply because a large portion of the grain is bound for Montreal and the business of transporting grain through the Welland canal is therefore favored by the Canadian authorities. On the other hand, the anthracite coal passing through the canal is all shipped from ports in New York state to western ports in the United States, the business is coastwise trade, carried on exclusively by American vessels, and without profit or advantage to the people of Canada. A double toll is therefore collected on this commodity. So long as tolls are imposed it is certain that advantage will be taken of such facts. It is the purpose of the International Conference to seek to remove the irritating controversies between the two countries; controversies which provoke retaliation from the party which considers itself injured, and so lead to a multiplication of controversial questions between the two governments concerned.

CANADIAN REVENUE SMALL IN COMPARISON TO FEELING AND IRRITATION CAUSED.

The abolition of these tolls by the Canadian authorities would not deprive them of a great amount of revenue. For instance, the total revenue collected by the Welland canal in 1896 (the latest statistics we have at hand) was $194,969.33; cost of maintenance, $63,530.87; the net revenue $131,438.46. The sum is in itself small, and is in part a tax on the export business of Montreal, which the Canadians themselves are anxious to foster and increase. But in this connection there is another important factor in the recent development of new competitive routes which, in their operation, so seriously affect this route, handicapped by the toll system, that comparatively little grain is to-day moving through the Welland canal because of that system; and which, continuing, and so long as the water route is thus handicapped by tolls may operate to largely prevent the shipment of grain by this route, and so to not merely reduce revenue but depreciate generally the use and public value of a system designed to furnish and develop cheap water transportation, which the enterprise of the Canadian people has brought practically to completion. In view of the facts that the revenue involved is not large, that the removal of the tolls would have in itself compensating advantages to Canadian business and consumers, and that we ask only what our own government grants freely to them in larger measure, it is not believed that the Canadian government will be strenuous for the continuance of these tolls when convinced that their abolition is sincerely desired by the United States government as a reciprocal privilege of the free enjoyment of United States canals, waterways and aids to navigation by Canadian vessels, and as a full and complete acceptance without violation on either side of the spirit as well as the letter of Article 27 of the Treaty of Washington.

The foregoing is signed by Joseph C. Gilchrist, Charles W. Elphicke, Alexander McDougall and Harvey D. Goulder, counsel, forming the committee of the Lake Carriers' Association.

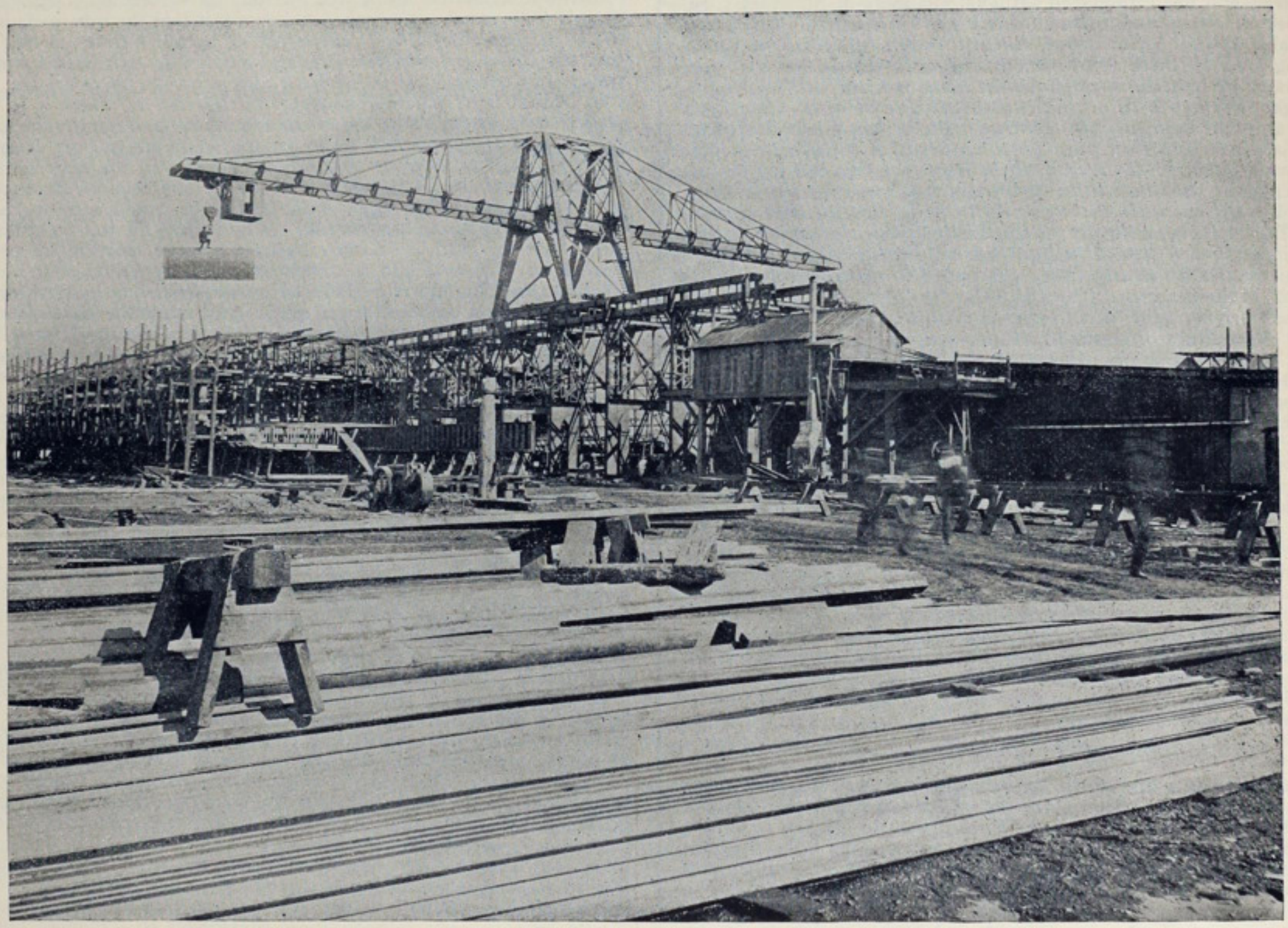
The cruiser Terrible, for some time past the most discussed vessel in the British navy, and upon which abuse has been showered almost as freely as it was at one time upon the United States battleship Texas, recently made a successful sixty-hours' trial at three-fifths full power. A speed of 20 knots was maintained a good portion of the time. The draught of water forward was 26 feet 7 inches; aft, 29 feet 4 inches; steam in boilers, 222 pounds; vacuum, 25.5 inches starboard and 25 inches port; revolutions, 93.81 starboard and 93.51 port; total indicated horse power, 15,554.4; speed, 19.6 knots; coal consumption for all purposes, 1.96 pounds per unit of power per hour. During the trial the ship showed remarkable steadiness, and had there been a better quality of coal on board the results would have been even more satisfactory. Nevertheless, the speed for the sixty hours, with 15,554 indicated horse power, was only 1 knot less than was realized at the thirty hours' contract trial with 18,500 indicated horse power.

The steamer Cape Charles, built at the Roach ship yard, Chester, Pa., and which was described in the Review some weeks ago, made 18 knots on her trial trip. The contract called for 16 knots.

Big Crane at the American Steel Barge Co.'s Plant.

Ship builders who have had an opportunity to inspect it, express much interest in the gantry crane, installed some time ago at the plant of the American Steel Barge Co., West Superior, Wis. The crane traverses the full length of a runway, consisting of an elevated steel track, extending the full length of the ship yard between two building berths. The object of the service is the transference of material from the shops at the end of the yard out to the vessels under construction, this being accomplished by means of the crane with very little labor. The runway is of a very massive type, as shown by the illustration, for which we are indebted to the courtesy of the Iron Trade Review, and is well braced to withstand the strains caused by the crane. The lower portion is arched, the intention being to lay a railroad track down through the center. From this track material can be picked up by the crane and run out to ships under construction.

The crane is 170 feet in length, from out to out of arms, 55 feet high from top of rail to the under side of crane, and has a lifting capacity of 15 tons half way out on arms, and 5 tons at the extreme ends of arms. A distinctive feature of the construction is the double runway between which the wheels of the crane travel, and in view of which it would be impossible to overturn the crane on the runway. The American Steel Barge Co. did the work on the framework of the crane and runway in its own shops, under the direction of the Wellman-Seaver Engineering Co. of Cleveland, who designed the crane framework and runway. The latter company also furnished and put in position all the gearing and electrical equipment.



GANTRY CRANE AT THE PLANT OF THE AMERICAN STEEL BARGE CO., WEST SUPERIOR, WIS.

Parry Sound Route and Erie Canal.

Erastus Wiman, who for some time past has been at Buffalo, ostensibly in the interest of the furtherance of his schemes of canal transportation, has returned to New York enthusiastic upon the subject of the possible development of the Erie canal. He is emphatic in the expression of a conviction that the Parry Sound route from the point of production on the upper lakes to the point of export at Montreal is a new and important artery, of which New York must beware if it is to hold its own in the food movement from the west. He still holds, also, to the theory that to compete with the Parry Sound and other routes it will be necessary to complete the improvement of the Erie canal, but he is equally firm in the conviction that this improvement should contemplate also the widening of the locks to 35 feet, with a length of 150 feet, which would enable the accommodation of boats with a capacity of 20,000 bushels. Mr. Wiman argues that these vessels would be large enough to navigate Lakes St. Clair and Erie, forming a line direct from Port Huron, and also sufficiently large to navigate Long Island sound. As for the enlargement of the locks, it is claimed that the expense would not add more than from $3,000,000 to $5,000,000 to the estimate already formed, and that possibly the appropriation might be secured from the federal government by reason of the benefit that could be derived from the enlarged locks in the event of war. Mr. Wiman states that he found a strong sentiment among the canal men in favor of consolidating of their interests.

Resumption of American Line Service.

In all probability less than two months will elapse before the resumption of the American line's full service between New York and Southampton. The four liners, St. Louis, St. Paul, Paris and New York, are no longer attached to the auxiliary fleet of the United States navy, orders releasing them having been issued a few days ago. A naval board, consisting of Capt. Reed of the Richmond, Naval Constructor Linnard and Past Assistant Engineer Crawford, has examined the St. Paul and St. Louis, and estimated, according to a rumor, that at least a month and an expenditure of $200,000 will be required to put the vessels in the condition in which they were received from the steamship company, and which, according to a provision of the charter, must be done. The American line has, however, offered to accept a lump sum in lieu of these repairs, and it is probable that this will be accepted. President Griscom of the International company intimated in a recent interview that the four vessels which formerly ran on the Philadelphia route might be retained permanently on the New York-Southampton run, as well as the vessels which will be turned over by the government, and in this case, of course, the charter of the five Hamburg freighters, now in use between Philadelphia, Queenstown and Liverpool, will be continued indefinitely.

Officials of the American line are naturally very proud of the showing made by their vessels in the war. In addition to the action of the St. Paul in locating Cervera's fleet in Santiago harbor and standing watch for a week, awaiting the arrival of the United States war vessels, the accomplishments to the credit of the transformed American liners included the capture of the British steamship Restormel, while attempting to enter Santiago harbor; the cutting of the cable between Cuba and Hayti; blowing up of the Spanish steamer Lopez; landing American troops at Guantanamo; disabling of Spanish torpedo boat destroyer Terror, off San Juan harbor; the capture of the British steamship Twickenham, and several other prizes.

Considerable comment has recntly been occasioned by the publication by the Hamburg Ship Owners' Association of statistics on the question of suicide among firemen and trimmers employed on German steamships. According to these statistics, the average annual number of suicides among all persons belonging to the engine room staffs of German steamships during the past ten years was 2.5 per 1,000, while the average annual percentage of firemen alone was 1.05 per 1,000, and for trimmers 9.24 per 1,000, as against 0.46 suicides per 1,000 persons of the male population of Germany. Ship owners claim, and with apparent consistency, that the cause is to be found in the fact that a large number of men engage themselves for this hard and unpleasant service who have been unable to find employment of any other kind, or who have come to grief and who are neither physically nor mentally able to bear such hardships.

The British government has recently ordered several cargoes of Pocahontas coal for the coaling station at Bermuda. It is stated that the Indra recently loaded the huge cargo of 9,150 tons of the same coal for Manila.

New Business in the Ship Yards.

With three or four orders for new vessels to come out next season already in the hands of lake builders, it is more than probable that the several yards on the lakes will be quite busy during the winter. There is some figuring for new vessels going on with the big ore companies and it is probable also that the improved freight conditions, which give promise of continuing throughout the balance of the season, will prompt vessel owners to be quite liberal with alterations and repairs. The 6000-ton freight steamer on which the Cleveland Ship Building Co. will begin work at Lorain in a few days will be a duplicate as far as the hull is concerned of the Wolvin steamer Superior city, but General Manager Wallace says that a decision has not as yet been made regarding engines and boilers—whether quadruple engines and Babcock & Wilcox water tube boilers, or triple engines with Scotch boilers, will be used. The contract recently awarded to the American Steel Barge Co. of West Superior by the Standard Oil Co. for an oil barge was on plans of the Barge Co. The vessel is to be 210 feet in length, 38 feet beam and 17 feet depth. A rumor from Detroit is to the effect that the dry dock company will probably secure a contract for a duplicate of the package freight steamer Troy, just completed for the lake line of the New York Central Ry. The report is not, however, from any of the officials of the Detroit company.

The Richelieu & Ontario Navigation Co. has let the contract for placing new boilers in the steamer Quebec to J. R. Weir of Montreal. The contract for the Kingston, sister boat of the side-wheeler City of Toronto, now building by the Bertram Engine Works Co., Toronto, for the Richelieu & Ontario Navigation Co. has not been closed as yet. The Bertram company has notified the Richelieu & Ontario people that despite the fire in their ship yard they are prepared to undertake the contract and deliver the vessel next spring. The Polson company are also bidders.

Emerson M. Hotchkiss of Waterbury, Conn., and Walter Hay of Seville, O., have formed the firm of Hay & Hotchkiss and purchased the plant at New Haven formerly occupied by the B. Manville Carriage Co., where they will on Oct. 1 begin the manufacture of motor launches. About 300 men will be employed.

The Campbell & Zell Co. of Baltimore are making extensive repairs to the tug C. W. Morse belonging to the Atlantic Transportation Co. of New York. She is to be fitted with two new Scotch boilers, 12 feet 6 inches in diameter by 12 feet in length, each boiler to have three corrugated furnaces.

The James Clark Co. of Locust Point, near Baltimore, are improving their ship building plant. One of the new buildings will be 220 by 60 feet in size and will contain the pattern, blacksmith and machinery shops, while the old boiler shop will be replaced by a new one.

Michael Doran recently launched at his yard at Durhamville, N. Y., the grain carrying vessel George Mack, building for F. Devergne Harvey of New York. The vessel is 98 feet in length, 17 feet beam and 9 feet draught, and has a capacity of 13,000 bushels.

The Burlee Dry Dock Co., Port Richmond, Staten Island, is making extensive improvements in its ship yard and has added a steel plant that will enable them to turn out vessels up to 3,000 or 4,000 tons.

Capt. Walter S. Visger who has this season operated the steamer Captain Visger on the St. Lawrence announces his intention of building a larger steamer to be ready for service next spring.

J. Grimm of Greenpoint, N. Y., is building a yacht for service on Jamaica bay. She is 52 feet over all, 16 feet beam and 5 feet 6 inches draught, and will be equipped with a Diamler motor.

The Jackson & Sharp Co., Wilmington, Del., has begun work on two deck barges 110 feet in length by 26 feet beam for the Charles Warner Co. and Peoples Bros. of Philadelphia.

Capt. David R. Barmore of Madison, Ind., has secured the contract to build a side wheel steamer to replace the Spread Eagle for the Eagle Packet Co. of Alton, Ill.

The stock of the Milton & Philadelphia Steamboat Co. has all been subscribed and it is announced that the company will have a vessel built during the winter.

It is announced that the Maine Coast Navigation Co. will this fall let the contract for a new steamer to run on the route from Portland to Bangor.

Capt. C. B. Blakely of Ft. Smith, Arkansas is building a steamer 110 feet in length by 22 feet beam for the Arkansas river trade.

The Pioneer Steam Navigation Co. of Wabigoon, Ont., is building two steamers, each 65 feet in length by 12 feet breadth of beam.

E. W. Heath of Benton Harbor, Mich. has launched the steam yacht Thetis, building for J. H. Broughton of Chicago.

The steamer City of Pittsburg, building by Capt. Dana Scott at Marietta, Ohio is ready for launching.

W. C. Hayden of Kingston, Ont., will build a house boat 96 feet in length by 28 feet beam.

Comments on the Master's Manual.

The Master's Manual, issued by the Great Lakes Register, Royal Insurance building, Chicago, is certainly meeting with approval from the various interests connected with lake shippings. Following are some extracts from letters acknowledging receipt of the book:

WHAT THE MASTERS SAY:

It is the most complete book of information that has ever been printed for the use of masters on the great lakes.—D. Nicholson, master steamer Tom Adams.

It contains very valuable information to masters; very complete, and so condensed that needed information can readily be found.—Geo. F. Stilphan, master steamer Thos. W. Palmer.

A very handy book for every master to have in his desk. It is the whole thing in a nut shell.—Hugh Stevenson, master steamer Appomattox.

I prize the manual very much. It is just what we want and long needed, for we can find what is needed at short notice without going through all the rules of navigation of the United States. It will be of great service to every master.—Wm. Jamieson, master steamer Minneapolis.

I have examined the Manual carefully, and find it to be the only complete compilation of this nature to which masters have access. I know that its general diffusion will be the means of saving many lives, and greatly facilitate safe navigation, and I earnestly recommend it to every captain as his constant companion.—Capt. A. P. Gallino, steamer Stafford.

I consider the Masters' Manual a very valuable book for masters, and while at present cannot think of any suggestions, will do so if I learn of anything of value in the near future.—F. B. Houghton, master steamer Zenith City.

The Masters' Manual is the most valuable work I have yet seen, especially part 2, relating to instructions on the compass.—M. B. Boggan, first mate steamer Mahoning.

The manual contains very much valuable information to masters, such as instructions in use of compass, foretelling of weather, regulations in government canals, White law, etc.—Hugh O. Miller, master steamer Schuylkill.

Please accept thanks for your valuable Master's Manual and should anything come up that would be of benefit to it, I will be only too glad to give my assistance.—Wm. S. Hoag, master barge Geo. H. Corliss.

A very valuable and compact volume, full of useful information, and should be carefully studied by every master who wishes to keep pace with the times.—Wm. J. Crosby, master steamer C. H. Starke.

The manual is all right.—C. R. Thayer, master tug Arctic.

It is the very thing that I have been hunting for. It will be of great value to all masters on the great lakes. That part about the compass will be of much value to me, and I think others will find it the same.—Peter Thompson, master steamer Nebraska.

A very valuable book, and one that ought to be in the hands of every master on the great lakes.—E. J. Rattray, master steamer Republic.

WHAT THE OWNERS SAY:

I am most anxious that each of my masters should have a copy. Send me a supply for them.—R. R. Rhodes, Cleveland.

A very valuable line of information, and should be of great value to masters of vessels.—Wm. C. Blodgett, Bay City.

WHAT A VESSEL AGENT SAYS:

I have read the work carefully, and it will be in the hands of every vessel master on the great lakes as soon as its worth is known. In a very compact neat form it contains more information relative to the navigation of the great lakes and connecting rivers and canals than any publication I have ever read. Every master who has looked it over has at once made application for a copy.—D. Sullivan, Chicago.

WHAT THE GOVERNMENT OFFICIALS SAY:

I should think it would be a valuable aid to lake masters and pilots of steam vessels.—Jas. A. Dumont, supervising inspector general of steam vessels.

This book will be of great value to lake men generally. Nearly everything pertaining to the duties of masters and pilots is contained therein, and it is becoming necessary that all lake men should be thoroughly familiar with the contents.—M. J. Galvin, United States supervising inspector of steam vessels, 9th district.

WHAT THE INSURANCE COMPANIES SAY:

It is very complete and its influence must certainly be felt. It is a very progressive move.—St. Paul Fire & Marine Insurance Co.

It is a valuable book and will be very valuable for reference.—Detroit Fire & Marine Insurance Co.

It is a very interesting book and should be of use to those concerned.—Mannheim Insurance Co.

It commends itself to the underwriter as a work of great value to the lake marine interests.—Insurance Company of North America.

It will be of great assistance, and we heartily approve it.—British & Foreign Marine Insurance Co., Ltd.

This work, so highly commended by the varied interests identified with the lake marine, can be secured free of any cost, whatsoever, to any master or pilot who will send his address to Great Lakes Register, Royal Insurance building, Chicago. The Register takes this opportunity, through the courtesy of the Marine Review, to extend its hearty thanks and appreciation for the unqualified approval of those masters and pilots who have received a copy of the work.

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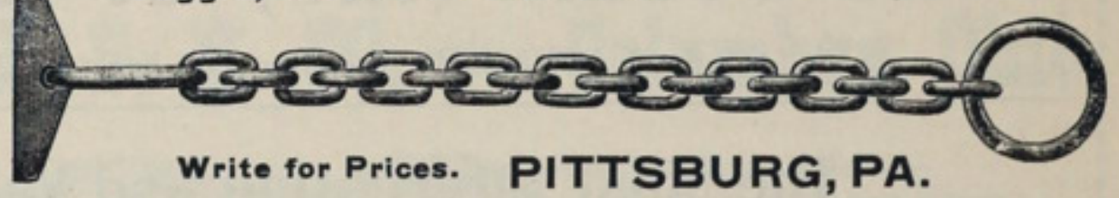

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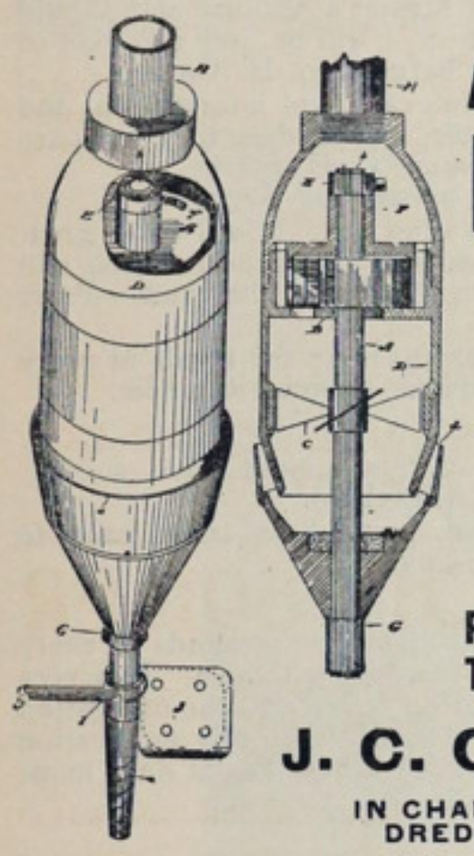

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Of great value not only to the student of our naval history, but of American history as well—*Brooklyn Eagle.*

The book represents an immense amount of labor and constitutes a unique repository of facts.—*New York Sun.*

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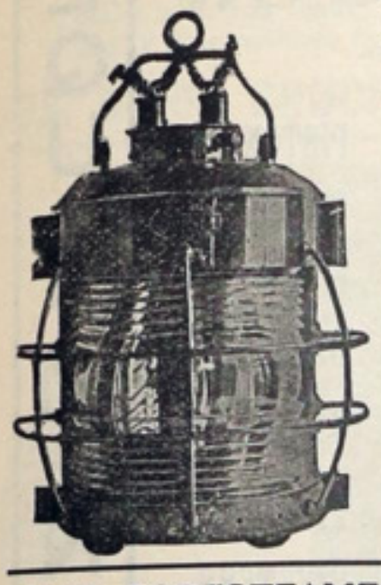

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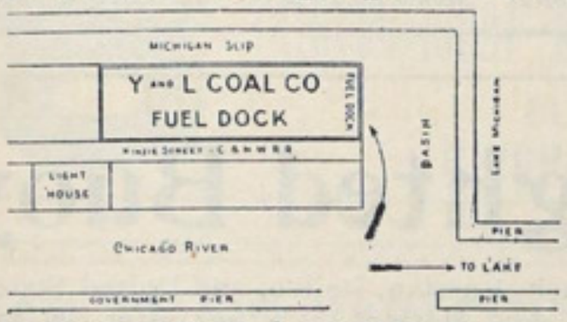

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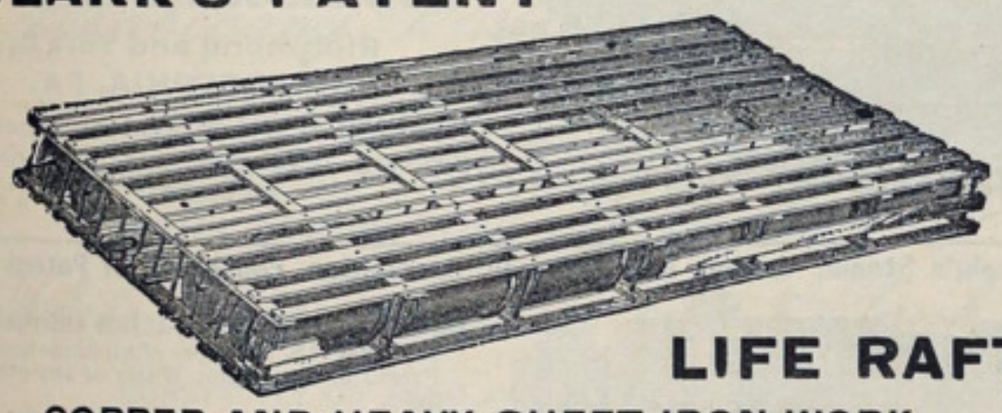

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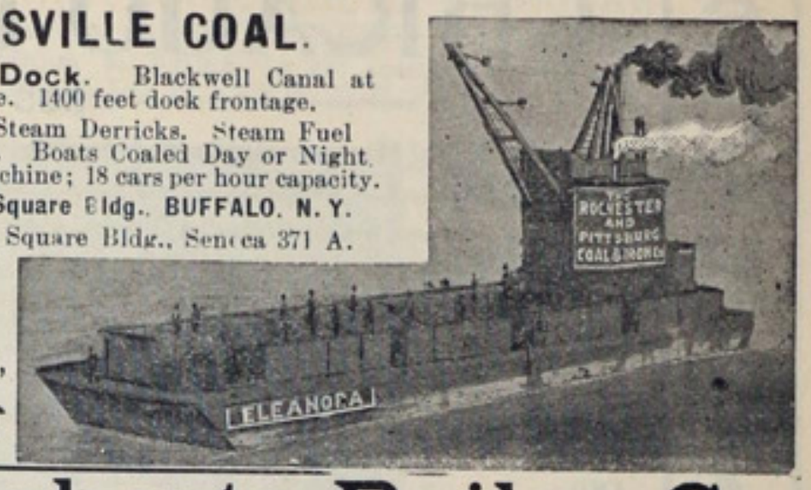

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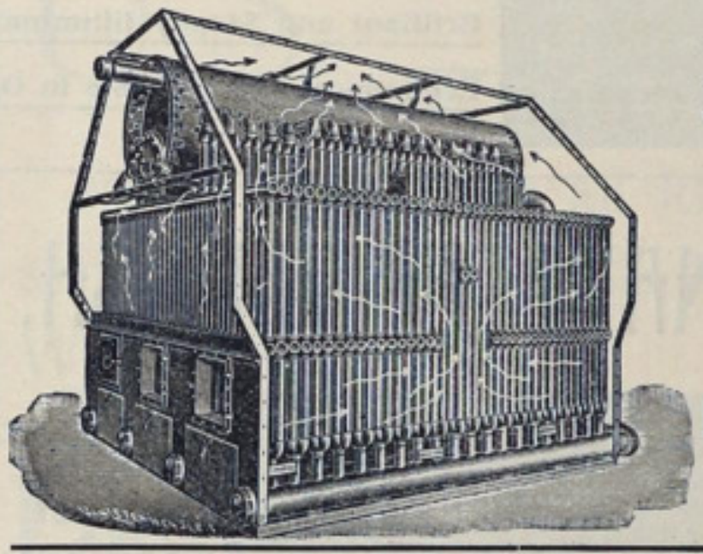

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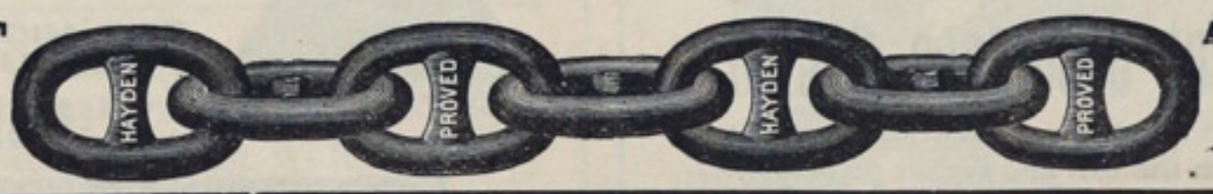

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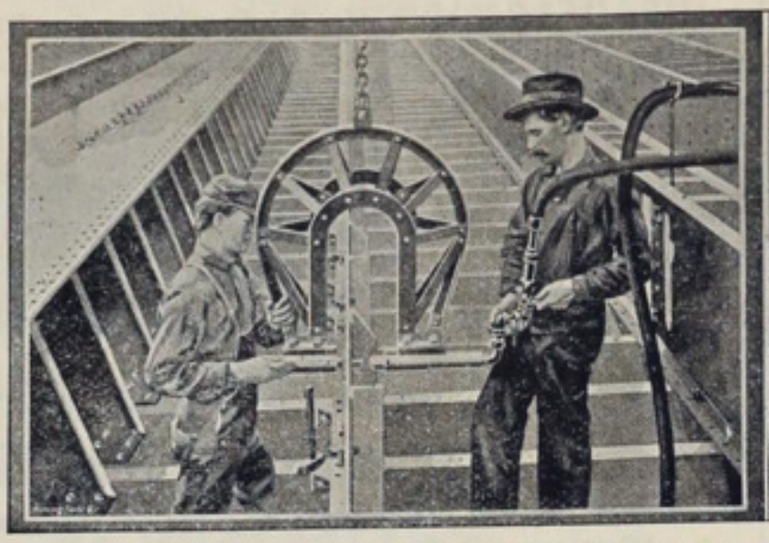

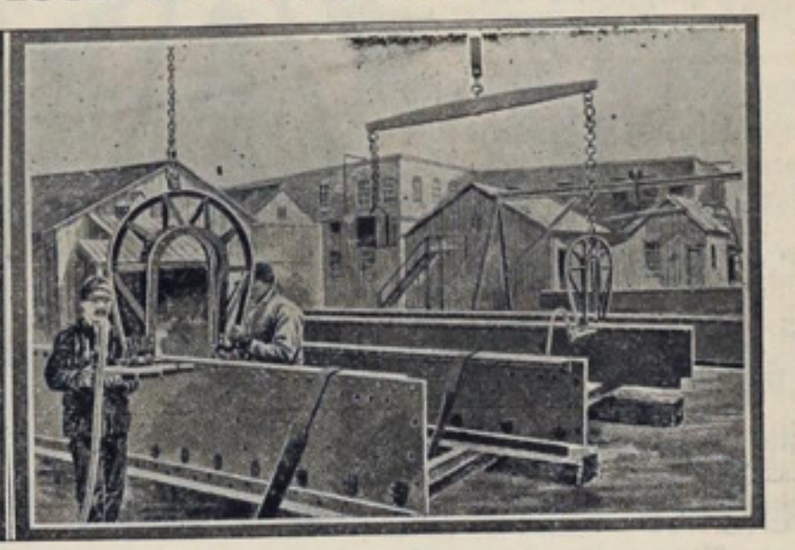

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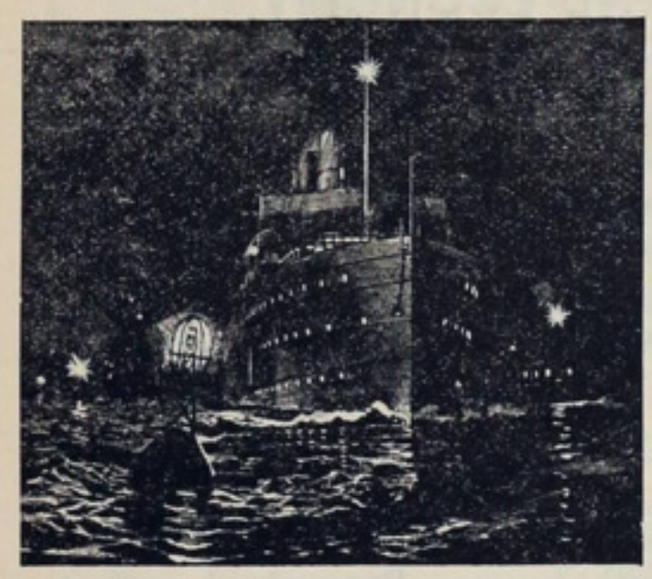

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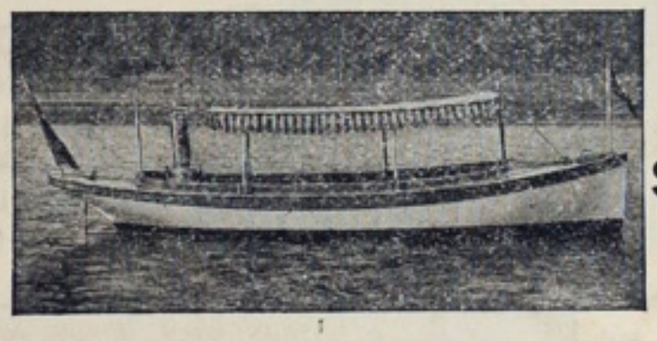

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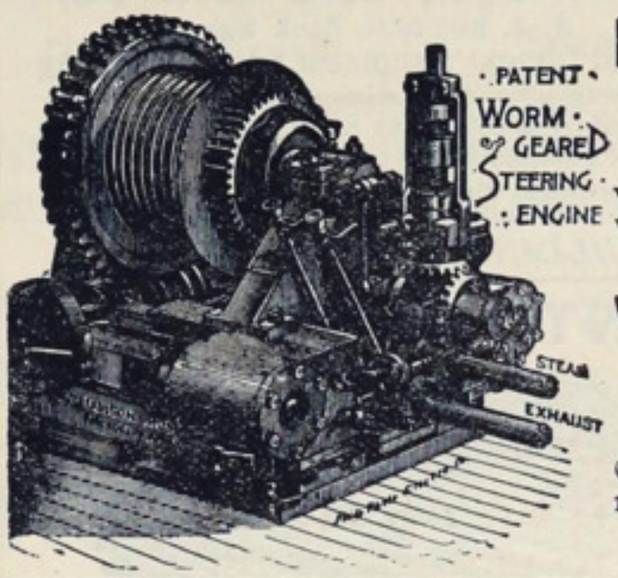

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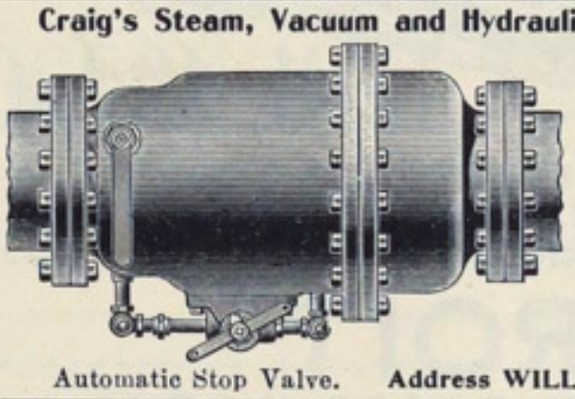

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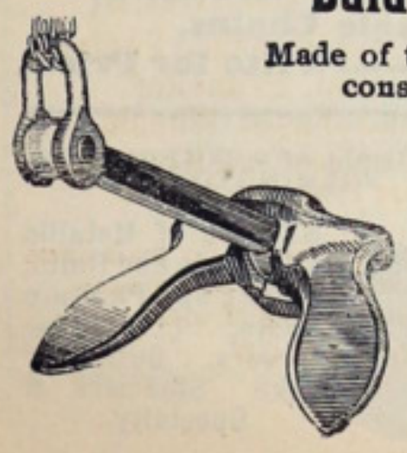

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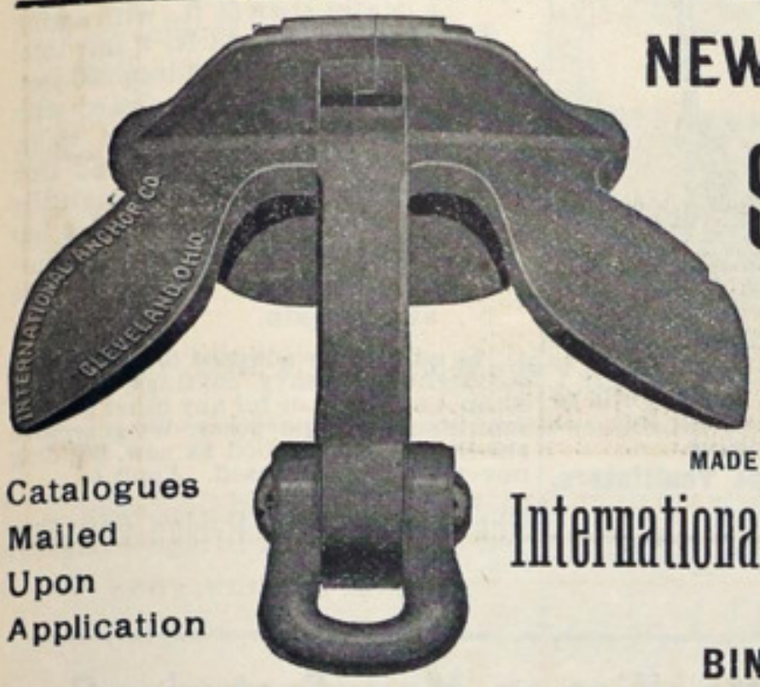

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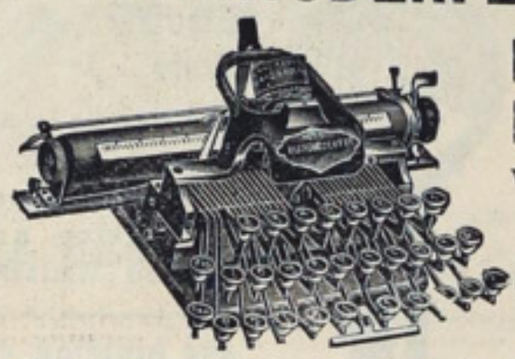

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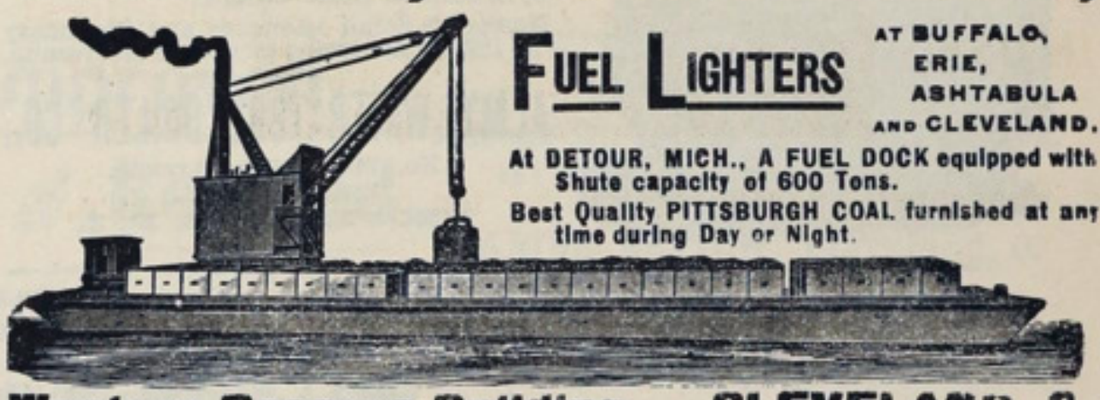

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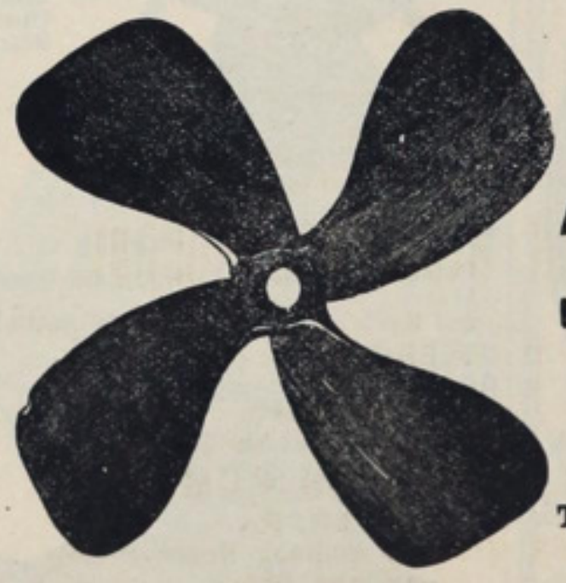

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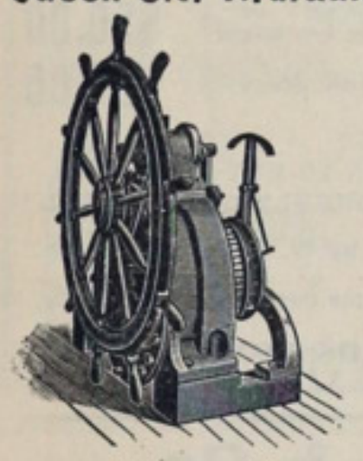

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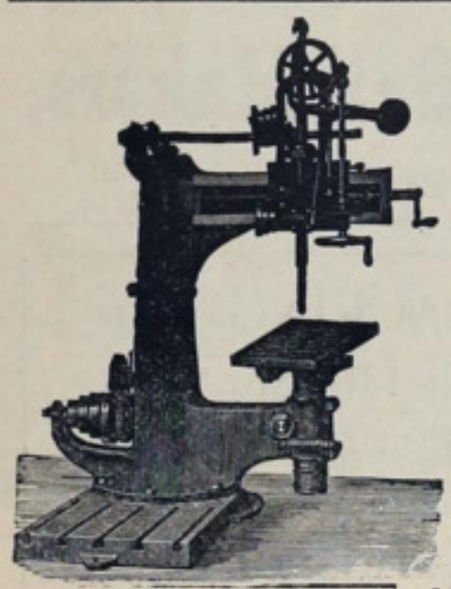

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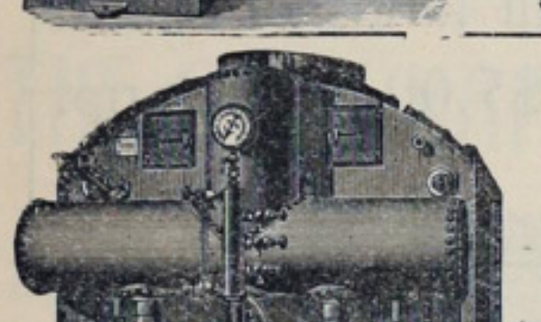

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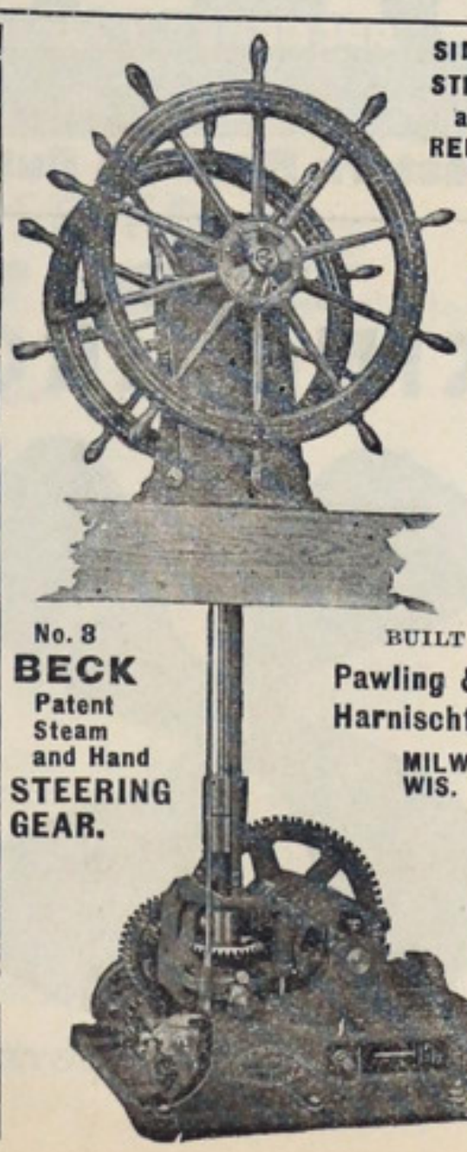

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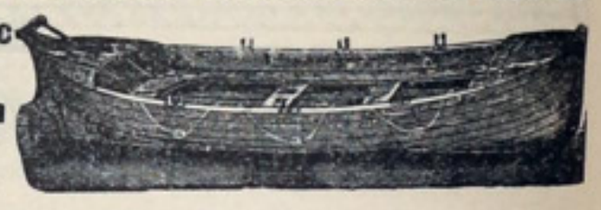

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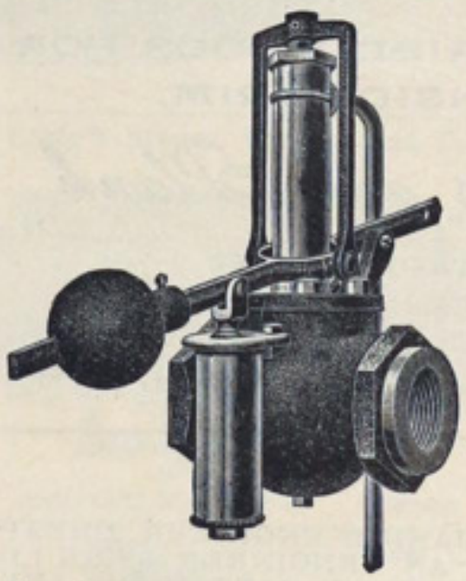

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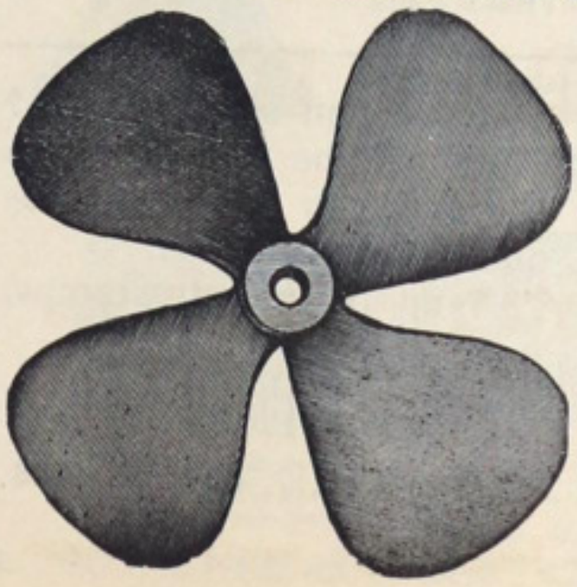

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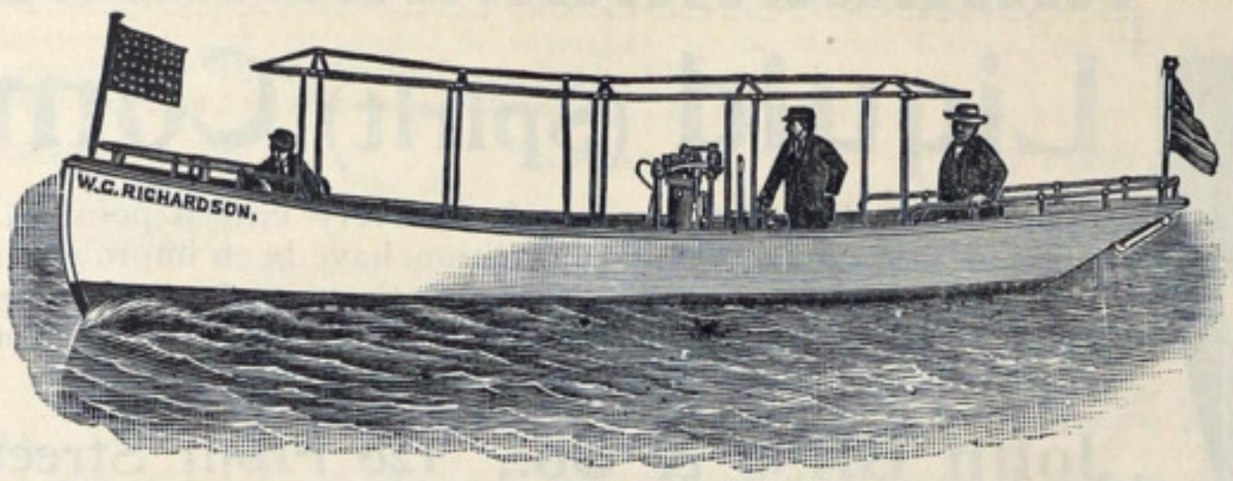

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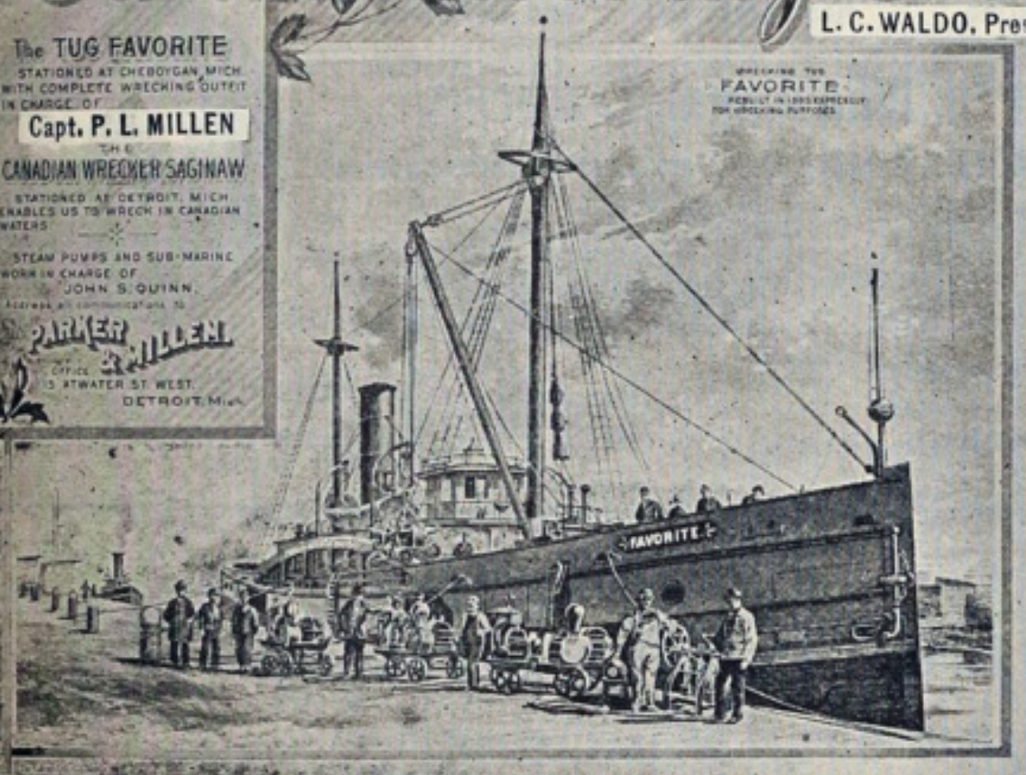

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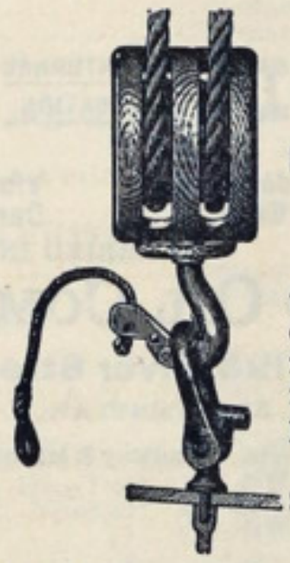

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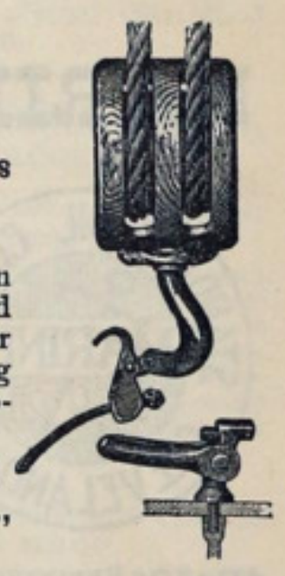

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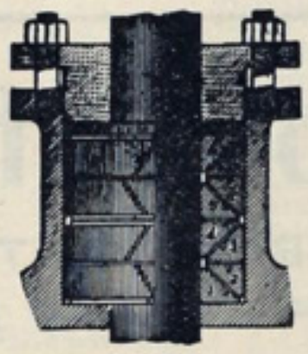

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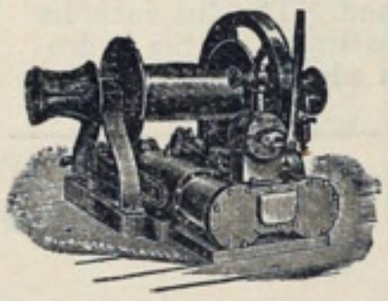

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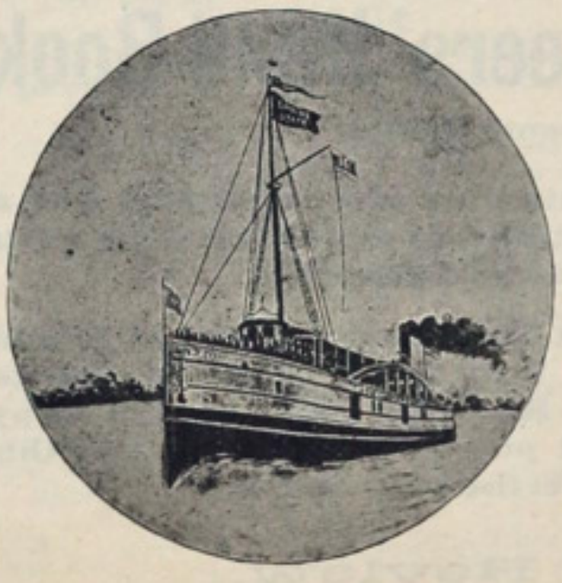

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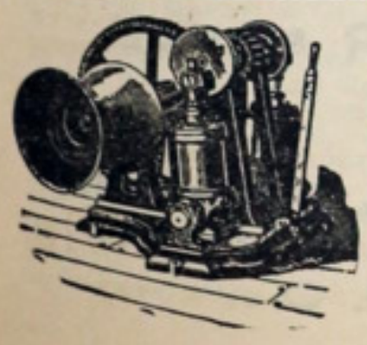

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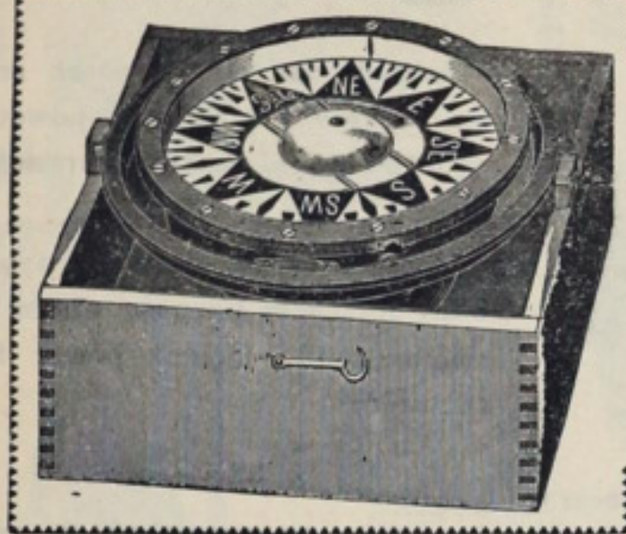

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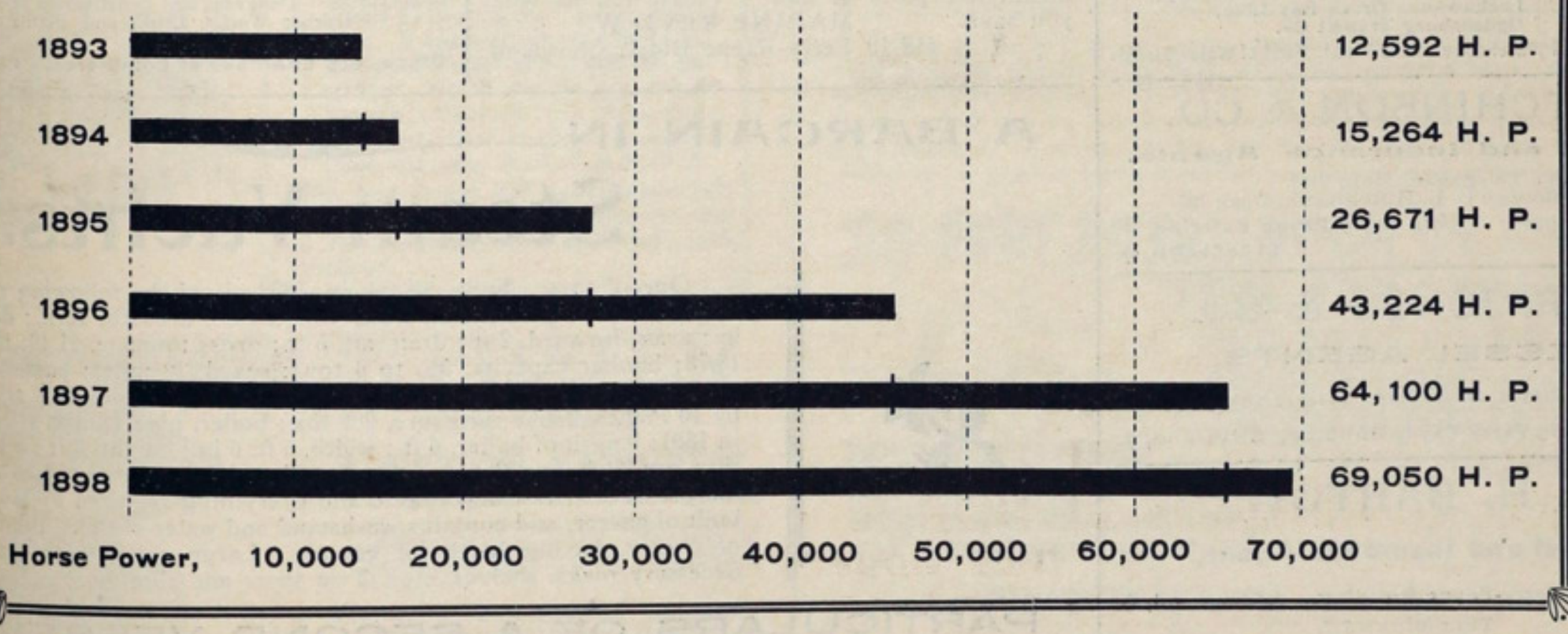

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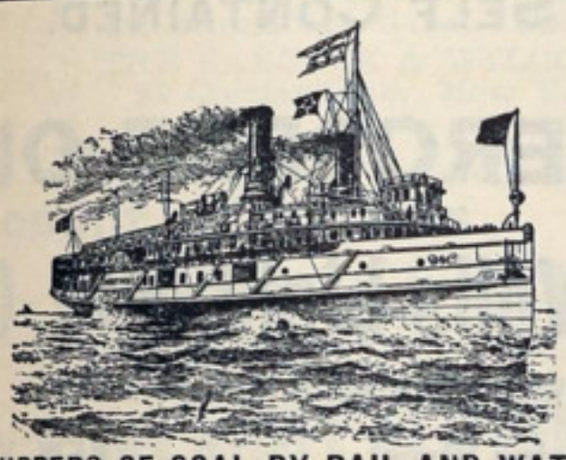

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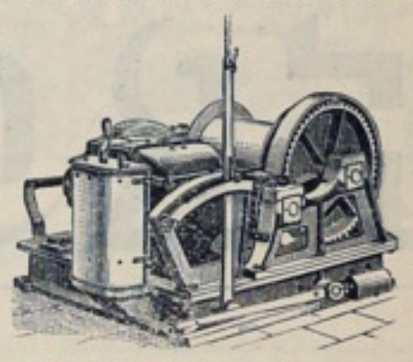

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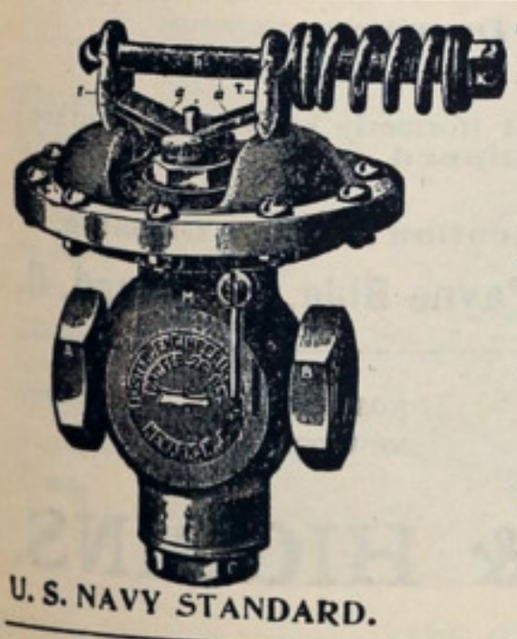

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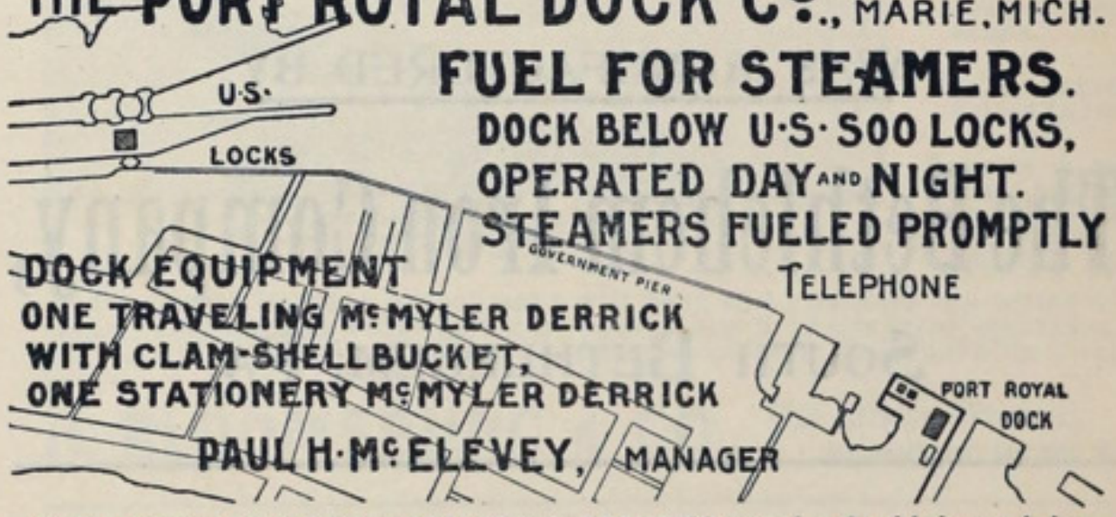

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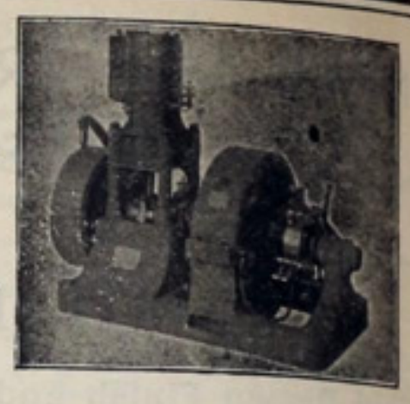

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After 20.000 miles of almost continuous steaming since going into commission, including her remarkable trip from San Francisco to Key West, the U. S. Gunboat MARIETTA, equipped with Babcock & Wilcox water tube boilers, ordered the following repair parts:

"T. B. S.—W. D. L.

NAVY DEPARTMENT,
Bureau of Supplies and Accounts,
Washington, D. C.

In reply refer to No. 29181.

June 10, 1898.

Gentlemen:

1. Please forward to the Commanding Officer, U. S. S. 'MARIETTA', Key West, Fla., 8 fire bricks, 4 rights and 4 lefts, No. R, 3440, Babcock & Wilcox boilers, to replace broken bricks between furnace doors.

2. Your bill for these articles should be sent to the same officer and should refer to Steam Engineering Requisition dated June 1, 1898.

Respectfully,

(Sig.) EDWIN STEWART, Paymaster General, U. S. N.

THE BABCOCK & WILCOX CO.,
29 Cortlandt St., New York."

On her long voyage the MARIETTA was not detained an instant on account of boilers.

THE BABCOCK & WILCOX CO., WATER TUBE BOILERS, 29 Cortlandt St., New York.

CLEVELAND CITY FORGE & IRON CO.

CLEVELAND, O.

IRON OR STEEL FORGINGS FINISHED COMPLETE, ROUGH MACHINED OR SMOOTH FORGED ONLY, OF ANY WEIGHT.
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AMERICAN STEEL BARGE CO.

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Of all classes built on the Shortest Possible Notice at our yards at

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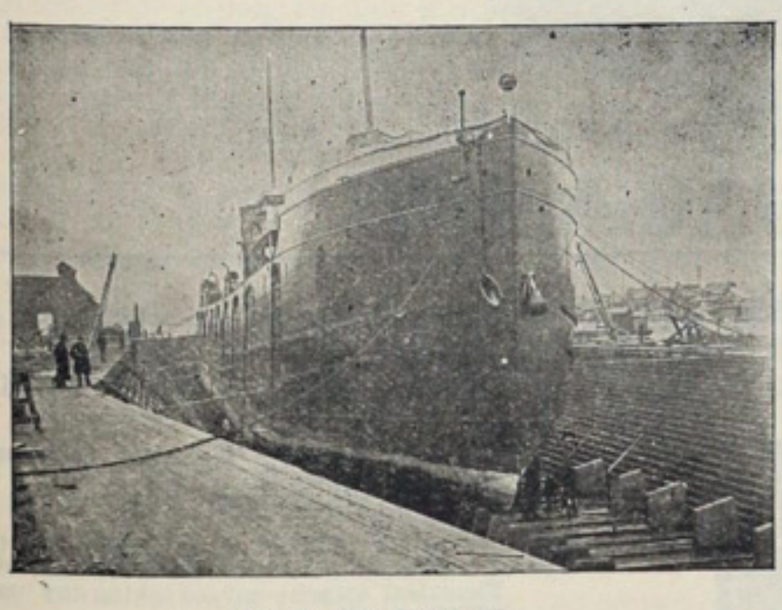
Plates & Material Always on hand to Repair all kinds of Metal Ships in Shortest Time.



Best Quality of Oak instock for Repairing Wooden Vessels of all Classes

SIZE OF DOCK.

Length, extreme	537 feet.	Entrance, Top	55 feet 9 in
Breadth, Top	90 " 4 in.	Entrance, Bottom	50 "
Breadth, Bottom	52 "	Depth over Sills	18 "

LARGEST DRY DOCK ON THE LAKES.

Prices for Repairs and Docking same as at lower lake ports

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A number of Propellor Wheels in stock at Dry Dock.

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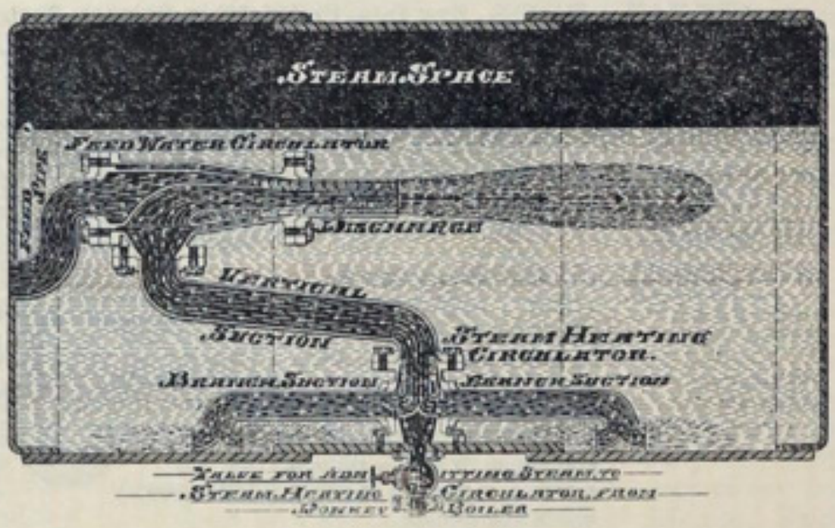
FOR HEATING AND CIRCULATING THE WATER IN STEAM BOILERS.



Increases evaporation 5% to 15%.

Will pay for itself in a year with saving in repairs.

Keeps all parts of Boiler at an even temperature.

Has no extra Joints to leak.

Creates a constant automatic circulation as long as boiler is fed.

The Steam Heating Attachment will heat and circulate the water with steam from donkey boiler in a half hour, while fires are being started, and be ready for steam with less straining than slow fires burning twelve hours.

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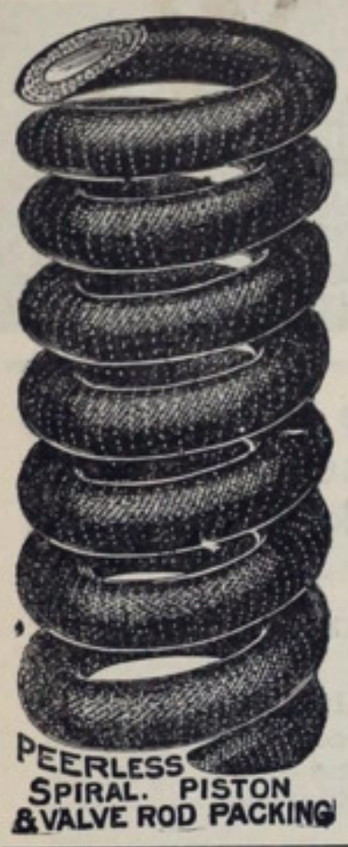

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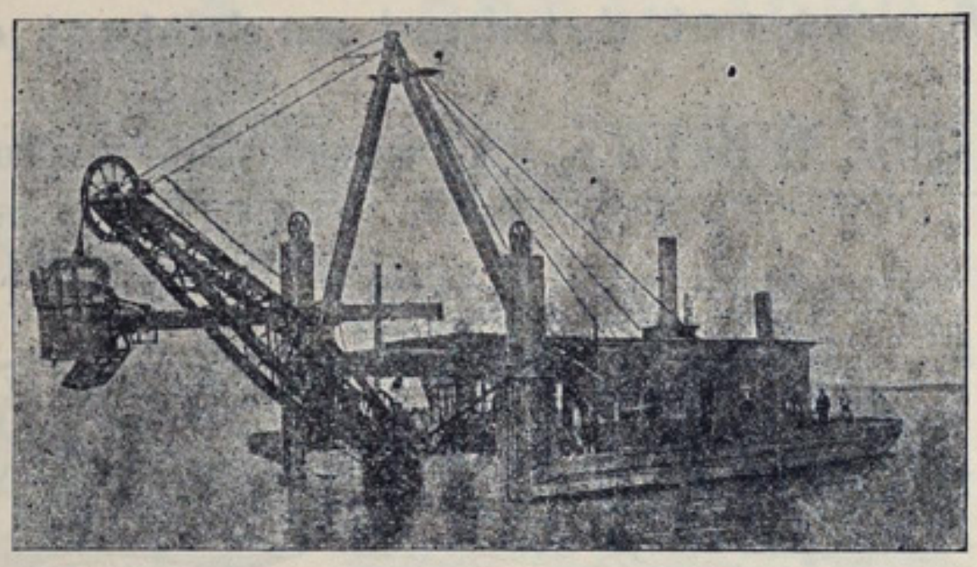

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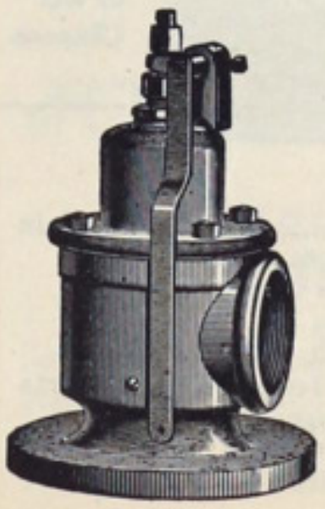

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